

Department of Mines & Energy

Annual Report

April 1, 1982 to March 31, 1983



Nova Scotia

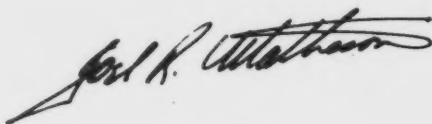


**PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES AND ENERGY**

The Honourable Alan R. Abraham, C.D.
Lieutenant Governor of Nova Scotia

Sir:

I have the honour to submit herewith the Annual Report of the Department of Mines and Energy of the Province of Nova Scotia for the period April 1, 1982 to March 31, 1983.

A handwritten signature in dark ink, appearing to read "Joel R. Matheson", with a stylized flourish at the end.

Joel R. Matheson, Q.C.
Minister of Mines and Energy

Halifax, Nova Scotia
August 28, 1984

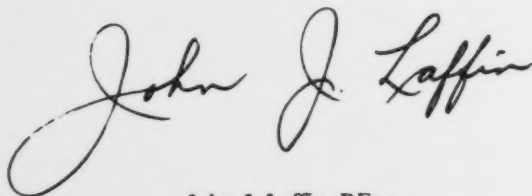


**PROVINCE OF NOVA SCOTIA
DEPARTMENT OF MINES AND ENERGY**

The Honourable Joel R. Matheson, Q.C.
Minister of Mines and Energy

Sir:

I have the honour to submit herewith the Annual Report of the Department of Mines and Energy for the period April 1, 1982 to March 31, 1983.

A handwritten signature in cursive script, reading "John J. Laffin". The signature is written in dark ink and is positioned above the printed name and title.

John J. Laffin, P.Eng.
Deputy Minister

Halifax, Nova Scotia
August 28, 1984



TABLE OF CONTENTS

Minister's Letter of Transmittal	3
Deputy Minister's Letter of Transmittal	5
Deputy Minister's Report	11
Organization and Personnel of the Department	13
Changes in Organization	14
Personnel	14
Offices of the Department	16
History of the Department	17
Mines and Minerals Branch	19
Mineral Resources Division	20
Project Geology Section	20
Introduction	20
Highlights	20
Projects	21
Public Awareness and Education	23
Publications	23
Mining Engineering Division	24
Introduction	24
Significant Events in 1982	24
Mining Examinations	25
Mining Engineering Section	26
Inspection Section	27
Mine Rescue	27
First Aid	28
Mechanical and Maintenance Section	28
Mineral Development Division	29
Registry of Mineral and Petroleum Rights	29
Resource Geology Section	33
Introduction	33
Mineral Inventory	34
Library Services	36
Industrial Minerals	37
Exploration for Industrial Minerals	37

Exploration Monitoring	39
Exploration Activity	39
Drill Core Libraries	43
Surveying	43
Energy Resources Division	45
Petroleum Resources Section	45
Introduction	45
Offshore Exploration	46
Onshore Exploration	48
Other Activities	49
Coal Development Section	50
Coal Exploration	50
Research and Development	52
Peatlands Inventory	53
Energy Management Division	54
Highlights	54
Economics and Statistics Section	55
Introduction	55
Activities	56
Public Information Section	57
Introduction	57
Operations	58
Engineering Section	60
Introduction	60
Activities	61
Administration Division	67
Accounting Services Section	67
Mineral Taxation and Fiscal Planning Section	68
Mineral Royalties and Taxes	68
Departmental Budget and Control	69
Mine/Miner Financial Assistance Programs	70
Personnel and Administration Section	70
Legal Services Section	71
Cartographic Services Section	72
Financial Information	73
Operations	73
Assistance Programs	75
Legislation	76

Appendix A — Publications	78
Mines and Minerals Branch	78
Energy Branch	81
Appendix B — Production Information from Mines, Quarries, and other Operations	82
Base Metal and Gold Mines	82
Coal Mining Operations	85
Industrial Minerals	90
Aggregate Resources	98
Miscellaneous Materials	102

FIGURES

Text

1. Organization of the Department of Mines and Energy	15
2. Project locations for the Mineral Resources Division	21
3. Project locations for the Mineral Development Division	33
4. Locations of industrial mineral exploration programs	38
5. Locations of gold exploration programs	41
6. Locations of base metal exploration programs	42
7. Location of offshore petroleum exploration agreement areas and landholder index	47
8. Location of wells spudded and completed in the Sable Island region	48
9. Location of onshore petroleum exploration leases and landholder index	49
10. Project locations of the Coal Development Section and coal exploration activity	51
11. Location of Sydney coalfield work	51
12. Historical review of royalties and taxes	69

Appendix B

B-1. Location of base metal and gold mining activity	83
B-2. Location of coal mining operations	90
B-3. Location of industrial minerals operations	95
B-4. Location of structural materials and miscellaneous materials operations	98

TABLES

Text

1. Examination results for certification under the Coal Mines Regulation Act	26
2. Summary of other certificates	26
3. Inspection statistics	27
4. Annual drilling statistics	28
5. Mineral exploration trends	31
6. Drill core acquisitions	44
7. Enersave program	62
8. Project types for Pilot Projects Program	63
9. Small scale energy demonstration program	64
10. Royalties and taxes	68
11. Personnel changes	71

Appendix B

B-1. Gold production	84
B-2. Coal production	88
B-3. Industrial minerals production	96
B-4. Structural materials production	99
B-5. Miscellaneous materials production	104

DEPUTY MINISTER'S REPORT

John J. Laffin, P.Eng., Deputy Minister

It is with a sense of accomplishment that I review the many developments of the 1982/83 fiscal year in the fields of energy and mining in Nova Scotia.

Exploration for oil and gas in the Scotian Shelf offshore Nova Scotia continued to accelerate during the past fiscal year, signalling a long-term return to high levels of drilling activity. Three significant natural gas discoveries at Banquereau C-21, South Venture D-54 and Olympia A-12 were made in the Sable Island area, adding to discovered reserves in the offshore region. Mobil Oil Canada Limited continued work on the Venture natural gas discovery. This work included the drilling of several more wells to delineate the extent of natural gas reserves. The Department worked closely with Canada Oil and Gas Lands Administration (COGLA) in monitoring the various activities associated with the Venture discovery.

The Department initiated studies related to offshore natural gas development, energy conservation and mineral development. The Department also co-ordinated the Province's submission to the National Energy Board in support of the location of a proposed Arctic Pilot Project gas terminal at the Strait of Canso.

Mineral production continued to be a major employer in Nova Scotia. During the 1982 calendar year, the mineral producers in Nova Scotia employed approximately 6300 people. The total value of all materials produced was \$273.8 million, an increase of \$16.1 million over the preceeding year. Employment in mineral production remained close to levels of the previous year and production was maintained in such traditional commodities as coal, gypsum, salt, limestone, and aggregates. This was achieved in contrast to the poor economic conditions of the industry of Canada.

The continued downturn in international metals markets reduced mineral exploration in 1982 from the high level of 1981. Although the value of exploration work was lower, most companies kept the majority of their claims. Many new geological, mineral deposit, and engineering studies were started in the Mines and Minerals Branch as part of the Canada-Nova Scotia Co-operative Mineral Agreement, 1981-1984, signed December, 1981 and worth \$3.9 million, cost-shared between the Province (\$1.24 million) and the Federal Government (\$2.7 million). The Mines and Minerals Branch initiated an Education and Public Awareness program to provide non-technical information about the Province's mineral resources and geology to the general public, schools, and other government agencies.

Coal research and development received new emphasis with the formation of the Committee on Atlantic Coal (CAC). The committee, chaired by the Deputy Minister of the Nova Scotia Department of Mines and Energy, has several working groups studying coal beneficiation, coal-liquid mixtures, and coal pyrolysis. Exploration for coal continued with work by Suncor and Petro-Canada. The Province participated with the Federal Government on a coal liquefaction and evaluation program conducted by the Nova Scotia Research Foundation Corporation. Provincially sponsored exploration and evaluation programs for peat defined large reserves of thermal peat.

The Province continued to enjoy substantial success in reducing dependence on petroleum products, particularly with respect to electrical generation. Provincial dependence on petroleum for primary energy use declined slightly to 71.8% in 1982 while petroleum used to generate electricity dropped to 40%. Between 1978 and 1982, Provincial consumption of petroleum declined from 33.4 million barrels (5,314 million litres) to 25.9 million barrels (4,120 million litres). The massive shift from oil to coal for electric power generation and the success of energy conservation and oil substitution programs accounted for this decline.

Many of these conservation and oil substitution programs were funded under two agreements with the Federal Government, the Canada-Nova Scotia Agreement on Industrial Conservation and the Canada-Nova Scotia Subsidiary Agreement on Energy Conservation. Under these programs, more than one million dollars in grants was provided for energy conservation and renewable energy projects.

The work of the Department is carried out by a highly motivated and qualified staff. Their work has resulted in this Annual Report and the many publications shown in Appendix A. I would also like to thank the Minister for the advice and thoughtful consideration he has provided the Department.

This Annual Report shows the variety of programs and amount of work which the Department is undertaking in minerals and energy-related matters. This Provincial impetus and the combination of a strong mineral industry, diversity of geological environments, a skilled workforce, and a prime geographic location continue to make Nova Scotia a desirable location for mineral and energy development.

ORGANIZATION AND PERSONNEL OF THE DEPARTMENT

The Department of Mines and Energy is organized into six divisions. Three of these divisions, Mineral Resources, Mineral Development, and Mining Engineering are grouped together in the Mines and Minerals Branch under an Assistant Deputy Minister. The other three report through their directors to the Deputy Minister. The organization of the Department as of 31 March 1983, is shown in Figure 1.

Mineral Resources Division: responsible for the assessment of the Province's mineral potential.

- investigates and publicizes the geology and mineral occurrences of the Province through its own scientific programs and through analysis of private sector exploration activities
- provides nontechnical information through maps, brochures, pamphlets, and talks, about the geology and mineral resources, exploration, and mining in Nova Scotia.

Mining Engineering Division: responsible for ensuring that Nova Scotia mines are developed according to current safety, environmental, and mining practice and regulations.

- conducts engineering studies
- approves mining plans
- conducts mine inspections and maintains mine rescue stations
- trains personnel in mine rescue and first aid.

Mineral Development Division: responsible for issues involving the exploration and utilization of the Province's mineral resources.

- maintains a Registry of Mineral and Petroleum Titles
- assists development of mineral resources
- operates libraries in Halifax and in Stellarton
- maintains core libraries and repositories in several areas of the Province
- monitors exploration work

Energy Resources Division: responsible for the development of the Province's indigenous energy resources: peat, coal, petroleum, and natural gas.

- monitors and regulates all petroleum exploration and development
- undertakes coal and peat exploration programs
- provides energy resource development.

Energy Management Division: responsible for issues involving the supply of energy from outside the Province and the demand for and utilization of energy within the Province.

- develops economic analyses and statistics on energy matters
- provides engineering services related to energy use
- develops and administers energy conservation programs
- provides public information about energy.

Administration Division: responsible for providing financial and other support services to the divisions of the Department.

- provides accounting, mineral taxation, legal, and personnel services
- administers coal mine/miner financial aid programs
- provides cartographic and photographic services
- provides accounting services for Novaco Ltd.

Changes in Organization

In the early part of the 1982-83 fiscal year the Cabinet approved the creation of two branches: the Mines and Minerals Branch and the Energy Branch. Each was to be administered by an Assistant Deputy Minister (ADM). The Minister of Mines and Energy, the Hon. Ron Barkhouse, appointed Dr. Jack Garnett as ADM for Mines and Minerals and Mr. Wynne Potter as ADM for Energy. The Energy Resources Division and the Energy Management Division reported to the ADM for Energy.

With the signing of the Canada-Nova Scotia Agreement on Offshore Oil and Gas Resource Management and Revenue Sharing in March 1982, the Federal Government established the Canada Oil and Gas Lands Administration (COGLA) office for Nova Scotia. The ADM for Energy, Mr. Potter, resigned from the Department and accepted the position as Director-General for Nova Scotia of COGLA. Subsequently the Department did not receive approval to fill the ADM vacancy.

The Resource Geology Section of the Mineral Resources Division was transferred to the Mineral Development Division.

Personnel

The Department has 140 employees. Most are based in Halifax and St. John's. Offices are maintained in Glace Bay and Springhill.

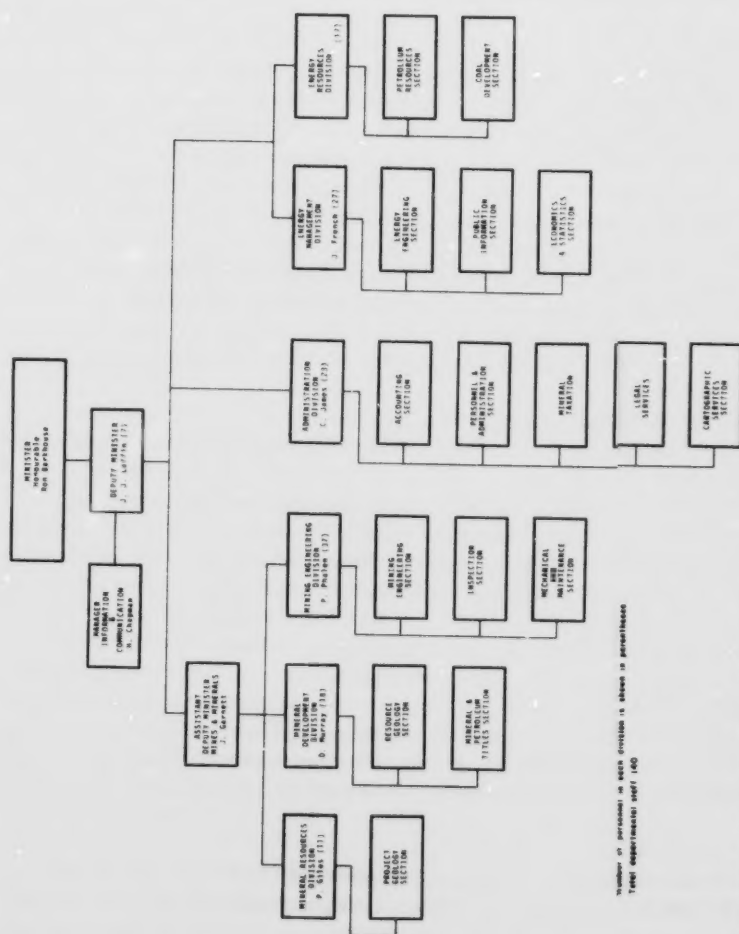


FIGURE 1. Organization of the Department of Mines and Energy.

Offices of the Department

The Department of Mines and Energy maintains four offices in the Province at Halifax (headquarters), Stellarton, Glace Bay, and Springhill. The addresses, phone numbers, and functions they perform are listed here.

HALIFAX

Joseph Howe Building
1690 Hollis Street

all Divisions and Functions

MINES AND MINERALS BRANCH

424-5346
424-4162
424-4049
424-4995

Mineral Resources Division
Mining Engineering Division
Mineral Development Division

424-5933
424-5019

Energy Resources Division
Energy Management Division

424-4629

Administration Division

STELLARTON

32 Bridge Avenue
752-8430

Mineral Development Division
(resource geology, exploration
monitoring, core library)
Energy Resources Division
(coal exploration)
Engineering Division
(drilling, maintenance work;
mine inspection)

GLACE BAY

Chernin Building
10 Commercial Street
849-7500

Engineering Division
(first aid, mine
inspection)

SPRINGHILL

29 Main Street
597-3963

Engineering Division
(mine inspection)

HISTORY OF THE DEPARTMENT OF MINES AND ENERGY

The mining of Nova Scotia's minerals has been an integral part of the economic fabric and industrial development of the Province for more than two centuries.

Although early governors of the Province mentioned the existence of large coal seams on Cape Breton in their dispatches in the late 1600's it wasn't until the early 1700's when coal was first mined on an organized basis to supply fuel to Fortress Louisbourg.

The development of Nova Scotia's mining and mineral exploration sector over the past century and a half as well as the evolution of the Department of Mines is outlined in the Department's annual reports. These reports detail the tonnage of minerals extracted, the value of mineral production, employment figures, exploration leases granted, the value of exploration, plus accidents and fatalities at the various mines.

The first known report was made in 1847 when a Committee on Mines and Minerals made a report on its activities to the House of Assembly.

The next report on mining operations was made by the Inspector of Mines in 1858. His report continued on an annual basis but in 1864 he reported to the Chief Commissioner of Mines. In 1865 the report became the annual report of the Department of Mines and Public Works.

In its formative years, the Department was primarily responsible for regulating the mining industry through the granting of leases for exploration work carrying out regular safety inspections of mines and by keeping detailed records of mineral production and the value of mineral production. Mines and Public Works continued under the same Commissioner until 1939 when Mines became a separate Department and Public Works was joined to Highways.

During the 1950's and 1960's the Department of Mines' mandate was changed. Now the Department was conducting its own geological research programs and was building up a resource of technical information to assist the private sector in its search for minerals.

The energy crisis of the early 1970's created a new interest in the search for alternate energy sources as well as a greater effort to use energy wisely. At the same time the exploration for oil and gas off the coast of Nova Scotia was increasing.

In 1979 the name of the Department was changed to the Department of Mines and Energy and it was given an expanded mandate for energy management and conservation as well as petroleum, natural gas, coal, and peat resource exploration and development.

MINES AND MINERALS BRANCH

J.A. Garnett, Ph.D., P.Eng., Assistant Deputy Minister

The Mines and Minerals Branch was established in May 1982 to consolidate and place new emphasis on the traditional Departmental responsibilities directly related to mining and mineral exploration in the Province. To achieve this, the existing Divisions of Mining Engineering, Mineral Resources, and Mineral Development were strengthened. The position of Assistant Deputy Minister, Mines and Minerals, was approved by the Cabinet to reinforce the mandate of this important jurisdiction at the Senior Management level.

The creation of this Branch paralleled a resurgence of government mineral-related programs due to the implementation of a two-year \$3.94 million, Canada/Nova Scotia Co-operative Mineral Agreement. However, the 1982 calendar year represented the most serious decline in Canada's mineral industry since the Great Depression. Nova Scotia's traditional mineral producers, coal, gypsum, salt, sand and gravel and limestone, maintained operations to an exceptional degree over this period but mineral exploration and development suffered a 75% decrease in the Province compared to the record levels of 1980 and 1981.

In spite of this depressed situation, attendance at the Department's Sixth Annual Open House in December was high. Great interest was shown by industry in new research into the gold environments of the Province. The recently completed Metal Deposit Map of Nova Scotia and the increasing emphasis on offshore exploration information were two other highlights of the Open House.

In an effort to reactivate the pre-recession industry enthusiasm regarding the mineral potential of Nova Scotia, the Mines and Minerals Branch developed a Educational and Public Awareness Program and established a Nova Scotia booth and a comprehensive information package at the Annual Prospectors and Developers Association Meeting in Toronto in March. This meeting attracted over 3000 delegates. Based on the interest expressed through inquiries at our booth, industry mineral activity in the Province will show a strong resurgence in 1983.

MINERAL RESOURCES DIVISION

Peter S. Giles, Ph.D., Director

The Division is responsible for the achievement of improved understanding of the geology and mineral deposits of the Province through its own investigations and through analysis of private sector activities. Information generated by divisional activities, disseminated through publication of maps and reports, is intended to assist in the optimal development of the Province's mineral resources.

Programs undertaken in 1982, cost-shared by the Department and Energy, Mines and Resources Canada under the terms of the Canada-Nova Scotia Co-operative Mineral Agreement 1981-1984 signed in December 1981, include geological, geochemical and geophysical surveys, as well as studies relating to industrial, energy, and metallic mineral commodities.

Project Geology Section

J.D. Keppie, Ph.D., Manager

Introduction

The Regional Surveys Section is responsible for collecting and publishing information on the geology and mineral resources of the Province. The Section acquires this information by conducting or supervising geological, geochemical, and geophysical investigations of areas in Nova Scotia. The results of these surveys are published as technical reports and maps and as general interest publications.

Information about the geology and mineral resources of Nova Scotia is widely used by exploration companies, government and private land use planning groups, environmental groups, and Federal and Provincial departments. The nine geologists in the Section contribute many technical papers for distribution through the Department's publications and outside professional journals. Seven field and office programs were conducted during fiscal year 1982-83. The locations of these are shown in Figure 2.

Highlights

The Canada-Nova Scotia Co-operative Mineral Agreement 1981-1984 (Co-operative Agreement), signed in late 1981, provided for the initiation or

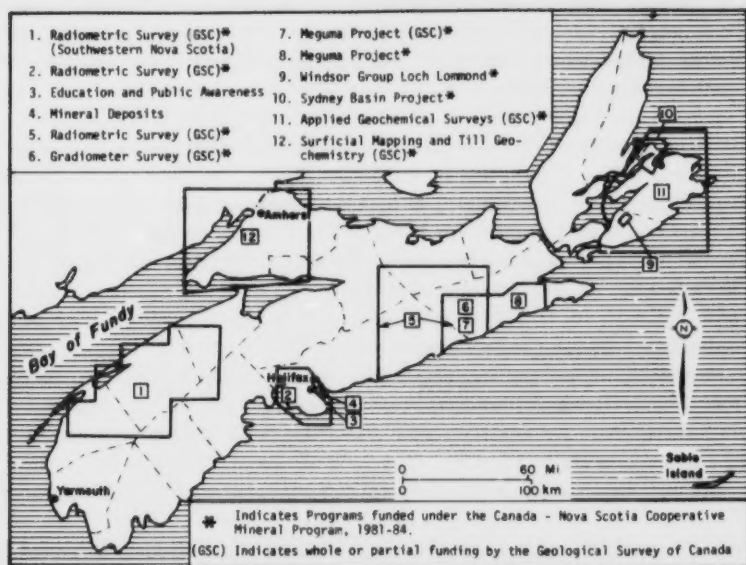


FIGURE 2. Project locations for the Mineral Resources Division.

continuation of geological, geophysical, and geochemical surveys of the Province. Most of the Section's activities have been considerably assisted by the Co-operative Agreement.

A new Education and Public Awareness Program was begun during the year. This program will increase the number of general interest publications about the geology and mineral resources of Nova Scotia.

Two additional contract employees have joined the Section to complement the existing nine. Both of these geologists are working on the Meguma Group Gold Project which is funded under the Co-operative Agreement.

Projects

During the 1982-83 fiscal year the geologists of the Project Geology Section worked on six major projects. Most of these were funded under the Co-operative Agreement. The Geological Survey of Canada provided advice and assistance in preparing and planning for some of these projects.

Geochemical Surveys. Applied geochemical surveys are continuing in the Province. In 1982 work focused on northern and southeastern parts of Cape Breton Island where over 1500 samples were collected for analysis of 12 elements.

Surficial Mapping. Geochemical maps of glacial deposits are complete for the Eastern Shore and most of the South Shore. The mapping of glacial deposits and their geochemistry as an aid to mineral exploration continued in the western part of northern Nova Scotia this past summer. In the near future, maps generated by this project will be available for all of mainland Nova Scotia.

Sedimentary Basins Studies. Major sedimentary basins and their sedimentary rock sequences are the subject of two projects in Cape Breton Island. The Sydney Basin Project began in the summer of 1982. It involves a multidisciplinary approach by geologists from the Department, University of Ottawa, and Dalhousie University, to understand the way in which these rocks were deposited and their mineral and coal potential.

At Loch Lomond (Fig. 2) the Department is continuing a study of the Windsor Group and younger clastic rocks. The focus of this study is the understanding of base metal, barite, and celestite mineralization in the area. The Loch Lomond area is important because celestite had been mined here and a new barite mine is now in operation.

Meguma Group Gold Project. Large areas in Halifax and Guysborough Counties along the Eastern Shore are the focus of detailed geological research and field mapping for gold and its geological environment. The Meguma Group Gold Project is a multidisciplinary study of gold mineralization. Geologists from the Division, Geological Survey of Canada, and St. Mary's and Dalhousie Universities are working together on the Project. New concepts regarding gold mineralization in this historic gold environment are emerging from this Project to supplement new private sector exploration initiatives.

Geophysical Surveys. The Co-operative Agreement provided for a special type of high resolution magnetic survey (gradiometer survey) over part of the Meguma Group Gold Project area on the Eastern Shore. This survey will enhance the mapping of gold bearing structures. The Co-operative Agreement has funded 2400 line miles (4000 line km) of a gamma ray spectrometer survey to determine the radiometric properties of the granites and adjacent country rock.

Mineral Deposits Studies. The understanding of mineral occurrences and deposits is the purpose of this project. Field, office, and laboratory studies examine the metallic and the nonmetallic mineral occurrences in the Province. The Metal Deposit Map of Nova Scotia was published this fiscal year. It represents a significant achievement in the understanding of the development of mineral deposits and occurrences.

Public Awareness and Education

The Mines and Minerals Branch and the Division have initiated a Public Awareness and Education Program this year to provide nontechnical information about the geology and mineral resources of the Province. The users of this information are other government departments, students, school curricula developers, and the general public. The purpose of the Program is to assist more people in understanding the importance of mineral resources and the mining industry in Nova Scotia.

Publications

Detailed technical publications by the geologists in the Section are the principal means of communicating information about the geology and mineral resources of Nova Scotia. The technical reports are either published as part of the Department's publications series or in scientific journals. In addition, Division staff give lectures and talks at scientific meetings, local universities, and community or school groups.

Relevant short technical reports for each of the projects appear in the annual Mines and Minerals Branch Report of Activities. A list of publications by the geologists of the Section, as well as other Departmental publications, appears in Appendix A.

MINING ENGINEERING DIVISION

P.W. Phelan, P.Eng., Director

Introduction

The Engineering Division is responsible for the administration and regulation of the mining industry in the Province on behalf of the Department of Mines and Energy. These functions include the approval of new mining projects or modifications to existing projects, the responsibility for occupational health and safety of workers, protection of the environment, and efficient use of the Province's resources. The Division provides a diamond drilling service to the Mineral Resources and Energy Resources Divisions of the Department and to other government departments. The Division is responsible for maintaining the equipment and facilities needed for drilling activities and maintenance services for Departmental vehicles.

Significant Events 1982

The coal reclamation plant at Stellarton operated by Thorburn Mining Limited ceased production in October 1982 due to the exhausting of accessible mine dumps. Disposal of the plant and site restoration has commenced.

The East Kemptville tin deposit previously owned by Shell Canada Resources Ltd. was purchased by Rio Algom Ltd. Work previously done on the deposit is being re-evaluated and additional drilling and metallurgical testing is being conducted by Rio Algom.

Novex Mining and Exploration Co. Ltd. purchased the mill at Enon, Cape Breton County, following the bankruptcy of Yava Mines. The Company is rehabilitating the mill to treat barite ore from their deposit at Pine Brook near Irish Cove. Removal of overburden at the mine site has commenced and production should start in 1983.

Northumberland Mines Limited have completed their test milling program at the Cochrane Hill Gold Mine. They are now evaluating the results of the test milling program and doing additional metallurgical testing.

Canada Wide Mines ceased operations at their Gay's River mine site due to difficult mining conditions and low metal prices for lead and zinc. Site restoration has commenced.

Selminco Ltd. started operation of their second coal dump reclamation project. The new operation is located on the new Victoria Dump near New Waterford, Cape Breton.

With pleasure we report that there were no fatal accidents in the mines and quarries of Nova Scotia in 1982.

Mining Examinations

Board of Examiners. Under the Coal Mines Regulation Act certain positions in underground coal mining operations must be filled by persons who have an appropriate "Certificate of Competency." A Board is responsible for overseeing the examinations and issuing the certificates.

The Board consists of five members appointed by the Minister of Mines and Energy:

A. MacKenzie, P.Eng., Glace Bay
H. Slauenwhite, P.Eng., Sydney
J. Reid, P.Eng., Sydney
K. MacLeod, Sydney
P. Phelan, P.Eng., Halifax
(Secretary to the Board)

Certificates of Competency. Training and examinations were held at the College of Cape Breton for the following categories of mine official: supervisor; mine examiner; first and second class mine electrician; first and second class mine mechanic; and hoist operator. Examinations were also held for the Certificates of Competency as mine manager and underground manager.

Each year the Mining Society of Nova Scotia awards a prize for the highest grade in examinations for mine manager, underground manager, and supervisor. This year (1982) the awards were made to:

Manager — V. H. MacDonald
Underground Manager — T. G. Lamb
Supervisor — D. A. MacKeigan

The results of the examinations are shown in Tables 1 and 2.

TABLE 1. Examination results for certification under the Coal Mines Regulation Act

Categories	Passed	Failed	Total
Manager	8	6	14
Underground Manager	3	3	6
Supervisor	31	0	31
Mine Examiner	49	5	54
Mine Electrician, First Class	12	0	12
Mine Electrician, Second Class	20	0	20
Mine Mechanic, First Class	14	0	14
Mine Mechanic, Second Class	10	0	10
Mine Surveyor	0	0	0
Hoist Operator	11	0	11
TOTAL	<u>158</u>	<u>14</u>	<u>172</u>
Percentage	92%	8%	

TABLE 2. Summary of other certificates issued by the Board of Examiners

Category	Number
Miner	76
Mine Rescue	31
First Aid	41

Mining Engineering Section

The Mining Engineering Section is responsible for ensuring that the Province's mineral and energy resources are utilized to their optimum and that mining operations are conducted within the regulations of the several mining acts in a safe, efficient, and environmentally acceptable manner. This includes reviewing proposals from industry for new mining projects or modifications to existing mines and making recommendations for the issuing of mining leases and permits. The Section also provides technical advice and assistance to industry and government on complex mining problems and conducts economic and feasibility studies for new mineral deposit projects.

Inspection Section

P.W. Phelan, P.Eng., Chief Inspector

The Inspection Section is responsible for inspecting mines and quarries to ensure the health and safety of employees in the mineral industry. Routine mine inspections are conducted under authority of the Coal Mines Regulation Act and the Metalliferous Mines and Quarries Regulation Act in all mines and quarries within the Province except for the coal mines of the Cape Breton Development Corporation (CBDC) which are inspected by Canada Department of Labour. Only the mine rescue stations are inspected by the Department. The Inspection Section has a staff of eleven working from regional offices in Stellarton, Glace Bay, and Springhill. The number and types of inspections conducted during the fiscal year are shown in Table 3.

TABLE 3. Inspection statistics for the fiscal year

Category	Number
Inspections	360
Mine Rescue Classes Conducted	53
Rescue Station Inspections	82
Mining Examinations Invigilated	20
Fatalities	0
Unusual Occurrences	2
Illegal Mines closed	0

Mine Rescue

The Mine Rescue Program is designed so that sufficient fully trained mine rescue teams are available for an emergency in any mine in the Province. Mine rescue stations are located at most mines. A central mine rescue station is located at Stellarton. Two inspector/instructors are employed by the Department. Monthly training sessions are conducted at all underground mines in the Province. Mine rescue instructors conducted classes in mine rescue procedure at the University College of Cape Breton and at the Technical University of Nova Scotia.

The annual Provincial Mine Rescue Competition was held at the Miners Forum, Glace Bay, on Saturday, June 5, 1982. Five mine rescue teams from CBDC, one from Canadian Salt Company at Pugwash, and one from Drummond Mine competed. A team from No. 26 Colliery (CBDC) won the competition.

At the end of the year there were 77 certified mine rescue persons, 8 trainees, 4 supervisors, and 2 inspector/instructors.

First Aid

First aid instruction is given at all mine sites. Inspections are made of the first aid facilities and programs at these mines. Twenty-two candidates were successfully certified in the St. John Ambulance emergency first aid course administered by the Department.

Mechanical and Maintenance Section

D. Polley, Manager

The Mechanical and Maintenance Section is responsible for operating the Department's diamond drills and maintaining all mechanical equipment and vehicles.

The amount of drilling performed by the Department declined by 18.8% in 1982 (Table 4). The drilling was conducted for programs associated with coal reserves, gypsum, Cretaceous sand and clay deposits, soils, and stratigraphic studies.

TABLE 4. Annual drilling statistics

Year	No. of Holes	Amount of Core	
		Feet	Metres
1980 calendar year	142	28 070	8506
1981 calendar year	161	24 763	7511
1982-83 fiscal year	84	22 189	6724

MINERAL DEVELOPMENT DIVISION

D.A. Murray, M.Sc., Director

The Mineral Development Division is responsible for mineral and petroleum titles and for providing a liaison between the mineral exploration industry and other departments of government.

This Division also has the responsibility for the monitoring of exploration activity in the Province and for the collection and storage of diamond drill core. The Division is divided into two Sections: Resource Geology and Registry of Mineral and Petroleum Titles.

A significant accomplishment during the past year was the construction of a Core Library facility in the Stellarton Industrial Park. This project was part of a two year Canada-Nova Scotia Co-operative Mineral Agreement with Energy, Mines and Resources Canada. This facility consists of three buildings and has allowed this Department to collect several hundred thousand feet (metres) of core which will provide valuable geological information to exploration companies.

Members of the Division staff and the Director participated in committee work with the Deputy Minister's Land Use Group. The Division provided information of the affects of land use policies on the mineral exploration and mining industries.

Registry of Mineral and Petroleum Titles

R. Slater, P.Eng., Manager

The Mineral and Petroleum Rights Registry, which by legislation is situated in Halifax, is responsible for accepting all applications for mineral and petroleum rights and issuing licences. The applications are for exploration licences, petroleum licences, leases, special licences, and permits. Subject to verification of the availability of lands, payment of fees, and understanding of work requirements, etc., the applications are processed and the appropriate licence(s) or lease(s) are issued.

Since the signing of the Canada-Nova Scotia Agreement on Offshore Oil and Resource Management and Revenue Sharing in March 1982, no applications have been accepted for offshore lands which are now jointly administered under the terms of the Agreement.

In addition to dealing with applications the Registry also processes and registers any documents affecting licences such as transfers of titles, assignments of interest, option agreements, and exploration agreements. Statements of exploration expenditures and reports of activities that pertain to consideration for renewals of rights are received by the Registrar.

Disposition of lands under licence and lease, both mineral and petroleum, are maintained on sets of maps which are continually updated. These maps are available for scrutiny by the public and industry and can be supplied as prints for a nominal fee.

The registry is responsible for all fees, bonds, and other monies derived from mineral and petroleum licences and leases, statutory work deposits, payments in lieu of work, and all receipts from sales of maps, prints, acts, and other library items, etc.

Registry personnel normally consists of the Registrar, two Assistant Registrars, and secretaries with occasional additions of temporary staff. In addition to the normal functions affecting licensing and answering of enquiries, staff of the Registrar's office were members of committees dealing with legislation affecting mineral and petroleum rights. They attended meetings under The Enquiry into Uranium Exploration. Maps, historical memos, and statistics were prepared for the uranium enquiry. The staff also prepared maps of claim holdings, and petroleum and natural gas licence holdings for the annual Open House and the Prospectors and Developers Association Meeting.

During calendar 1982, 1159 licences (both exploration and development) were issued by the Department. These covered a total area throughout the Province of 1,627,640 acres (658 683 ha). A comparison of exploration trends over the period 1976-82 is shown in Table 5.

TABLE 5. Mineral exploration trends in Nova Scotia.

Summary (onshore)		1976	1977	1978	1979	1980	1981	1982
Value of Reported Assessment Work		\$1 600 000	\$3 800 000	\$5 900 000	\$4 700 000	\$7 564 000	\$ 8 441 270	\$4 100 000
Exploration Expenditure		—	—	—	—	—	\$14 608 000	\$5 553 000
Total Licences Issued		1 489	2 894	2 393	1 841	2 559	1 952	1 159
Claims Recorded Onshore ¹ area in acres (hectares in parentheses)								
Base Metal	claims	34 434	70 936	38 597	40 497	88 703	68 863	39 626
	acres	1 377 360	2 837 440	1 543 880	1 619 880	3 548 120	2 754 520	1 585 040
	hectares	(557 398)	(1 148 272)	(624 786)	(655 542)	(1 435 874)	(1 114 715)	(641 443)
Uranium	claims	21 526	48 721	31 978	30 920	25 483	6 225	—
	acres	861 040	1 948 840	1 279 120	1 236 800	1 019 320	249 000	—
	hectares	(348 451)	(788 668)	(517 642)	(500 515)	(412 504)	(100 767)	—
Salt, Potash	claims	224	887	1 148	2 256	13 505	5 225	1 065
	acres	8 960	35 480	45 920	90 240	540 200	209 000	42 600
	hectares	(3 626)	(14 358)	(18 583)	(36 519)	(218 611)	(84 579)	(17 240)
Number of Mineral Assessment Reports		70	90	132	126	140	150	121

TABLE 5. Continued

		1976	1977	1978	1979	1980	1981	1982
Total Areas Held	acres	2 247 360	4 821 760	2 868 920	2 946 920	5 107 640	3 212 520	1 627 640
Under Licence	hectares	(909 475)	(1 951 298)	(1 161 011)	(1 192 576)	(2 066 989)	(1 300 061)	(658 683)
Petroleum Licences Issued area in acres (hectares in parentheses)								
Land Areas	licences	29	20	37	44	52	99	68
	acres	2 678 833	2 431 592	3 452 573	3 456 875	4 284 909	6 230 046	5 419 952
	hectares	(1 084 087)	(984 032)	(1 397 209)	(1 398 950)	(1 734 044)	(2 521 214)	(2 193 380)
Submarine Areas	licences	179	160	160	147	151	172	168
	acres	37 273 269	33 634 964	33 634 964	31 221 055	31 589 070	34 786 199	33 965 867
	hectares	(15 083 980)	(13 611 608)	(13 611 608)	(12 634 732)	(12 783 663)	(14 077 479)	(13 745 520)

¹claims are 40 acres or 16.2 ha each

Resource Geology Section

Introduction

The Resource Geology Section provides an information system for the collection, evaluation, and dissemination of geological data. It is also responsible for providing a liaison between the mineral industry, this Department and other departments of government regarding land use and exploration regulation. The activities of the Resource Geology Section are coordinated through the Halifax and Stellarton Offices (shown on Fig. 3) and consist of the following activities.

Halifax Office

- Mineral Inventory
- Industrial Minerals
- Land Use
- Library Services

Stellarton Office

- Exploration Monitoring
- Core Storage
- Surveying

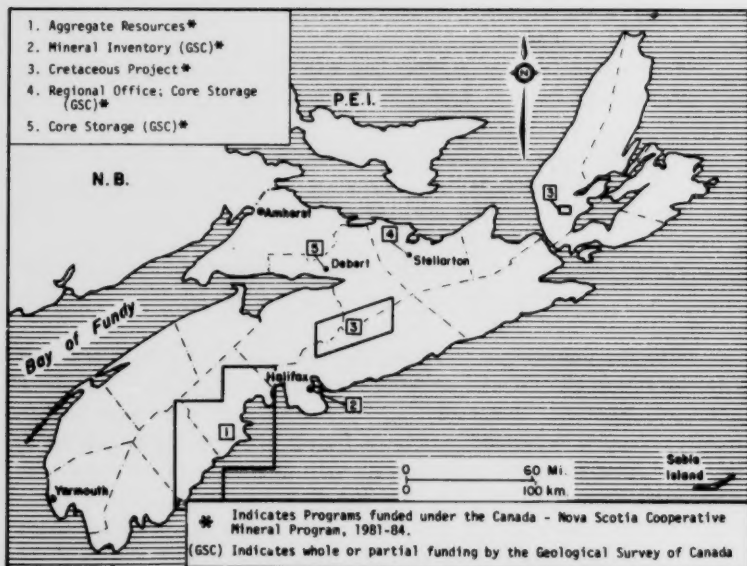


FIGURE 3. Project locations for the Mineral Development Division.

Mineral Inventory

The Mineral Inventory Group is responsible for the collection, verification, organization, and dissemination of mineral resources information. One of two functions of the group is to verify that submitted exploration assessment reports comply with the rules and regulations of the Mineral Resources Act, for the purposes of exploration licence renewal. The second function is to establish and maintain a database of mineral resources information that is current, useful, and accessible to the Department, other government departments and agencies, the general public, and the mineral exploration industry.

Reports Published During 1982/83. As a result of a major effort during 1981 to input document data into GEOSCAN, the national bibliographic database for geological information, eight indexes to various kinds of geoscience documents pertaining to Nova Scotia were published during fiscal year 1982/83. These indexes are:

- Report 81-4 Index to Assessment Reports 1864-1980*
- Report 81-5 Keyword Index to Assessment Reports
in NSDME Report 81-4*
- Report 81-6 Index to NSDME Publications, Open File
Reports and Theses 1862-1980*
- Report 81-7 Index to Drillhole and Well Data 1862-1980*
- Report 82-2 Index to Assessment Reports 1981
(with Keyword Index)*
- Report 82-3 Keyword Index to Publications in NSDME
Report 81-6*
- Report 82-4 Keyword Index to Open File Reports in
NSDME Report 81-6*
- Report 82-5 Keyword Index to Geological Survey of Canada
Documents on Nova Scotia to 1980*

With the publication of *Report 81-4* and *Report 81-6*, bibliographic information on all NSDME assessment reports, publications, open file reports, and geoscience theses up to 1980 are now conveniently organized and readily accessible in two major indexes. Future updates to these indexes will be in the form of annual-type indexes such as *Report 82-2 Index to 1981 Assessment Reports*.

Canada-Nova Scotia Co-operative Mineral Agreement (CNSCMA). As a result of funding obtained under the CNSCMA through the Energy, Mines, and Resources Canada (EMR), three projects were initiated in fiscal year 1982/83: the GEOSCAN Updating Project (joint EMR/NSDME funding), the Metallic Mineral Occurrences Updating Project (EMR funding) and the Drillhole Database Project (NSDME funding).

GEOSCAN Updating Project. A public reference file on microfilm is being created for the 1458 post-graduate Nova Scotia earth science theses. Additionally selected keywords and parts of the contents of these theses are being entered into GEOSCAN. By the end of fiscal year 1982/83, 430 theses had been acquired on microfilm, 140 theses had been coded, 100 theses had been entered on-line into GEOSCAN, and 200 theses had been plotted on the Thesis Study Area Map. The project will continue throughout fiscal year 1983/84.

Metallic Mineral Occurrences Updating Project. This project involves the checking and updating of previously compiled metallic mineral occurrences data (MOD) cards and the creation and compilation of new metallic MOD cards from a variety of post-1977 sources, such as mineral exploration assessment reports, NSDME publications and open file reports, GSC publications, earth science theses, and scientific literature. By the end of fiscal year 1982-83, of the 800 metallic MOD cards on file, approximately 750 had been checked and updated. The compilation of new metallic MOD cards will continue throughout fiscal year 1983-84.

Drillhole Database Project. In order to provide a means of storing, sorting and retrieving drillhole data from the documents cited in *Report 81-7* and also to generate map plots of actual drillhole locations, a computer database and map plotting system was developed with the cooperation of the Information Management Division of the Maritime Resource Management Service in Amherst, Nova Scotia.

For each drillhole, data are recorded under 28 different parameters or attributes, such as Claim Reference Map, Latitude, Longitude, Mineralization, Commodity, Assay, etc. The database can be searched on any one, combination, or all of the 28 parameters.

Coding and data entry of drill core information is now complete for about half of the Province.

Library Services

The Department maintains two libraries: a main library in the Halifax office and a branch library in the Stellarton office. Over 3000 maps, 2500 exploration assessment reports, 500 open file reports, 450 theses, 200 different periodicals, journals and trade magazines, and numerous reference texts and other document types are held in the libraries. The libraries function as important resource centres for information on the geology, energy resources, and mining history of Nova Scotia. To this end, the libraries provide the following services and facilities:

- reference and information services to the general public, Provincial Government personnel, professional geoscientists, engineers, and consultants in private industry
- sale of Department and Geological Survey of Canada publications and maps
- catalogued and classified files of the library holdings, including exploration assessment reports, open file reports and theses
- a mailing list of individuals, institutions, and corporations that wish to be informed of our activities and publication releases
- facilities for photocopying, microfiche reading and printing, and for making white print duplicates of maps.

During fiscal year 1982-83, 1064 white prints, 3394 photocopies and 3564 microfiche prints were made; approximately 5000 telephone requests were answered; 2041 library order slips were filled; approximately 1000 people (not including staff) made use of the library facilities; 600 books were catalogued; 400 interlibrary loans were processed; and 20 new publication announcements prepared and mailed. Revenue generated by the library during this period was \$24 813, comprising \$16 851 from the sale of maps, white prints, microfiche prints and photocopies and \$7962 from the sale of publications.

During 1982 renovations to the library resulted in major improvements which directly benefit users of the library. Floor space nearly doubled, and new shelving for our collections and periodicals, and arc files for maps were installed. Two new microfilm reader-printers were purchased, and all three reader-printers were housed in individual study carrels to provide more privacy.

In 1981, a contract librarian was hired to catalogue and classify our library holdings. This activity is continuing, and to date approximately 75 per cent of our holdings have been catalogued and classified. A card catalogue now exists for the library holdings, providing author/title and subject files, thus facilitating rapid access to a wide variety of geoscience reference material.

Industrial Minerals

Industrial mineral production, valued at \$103 000 000 for 1982, constitutes a major segment of the mining industry of Nova Scotia. Commodities produced include gypsum, anhydrite, salt, limestone, dolomite, barite, sand and gravel, clay, shale, building stone, and silica sand.

Maintaining liaison between industry and government and providing assistance to companies and individuals interested in industrial minerals is the responsibility of the industrial minerals geologist. In addition, two industrial mineral projects, one on sand and gravel resources in southwestern Nova Scotia and the other on Cretaceous silica sand and clay deposits, were supervised by the industrial mineral geologist. The location of these projects is shown in Figure 3.

Cretaceous Sand and Clay. The purpose of this project was to ascertain the stratigraphic relationship to bedrock and economic significance of the Cretaceous deposits of central mainland Nova Scotia and southern Cape Breton Island. The project consisted of mapping, refraction seismic surveys, drilling, and heavy mineral analyses. A final report is in preparation.

Sand and Gravel Resources. The purpose of this project is to identify the different kinds of sand and gravel resources of southwestern Nova Scotia. The project involves mapping the deposits at a scale of 1:50 000 and sampling and testing for quality of these materials.

Exploration for Industrial Minerals

In 1982 a new barite deposit at Pine Brook, Richmond County was brought into production supplying drilling mud grade barite to the oil and gas drilling industry. At Cooks Brook, Halifax County, development work began on a dolomite deposit to supply crushed and ground agricultural limestone.

Industrial mineral exploration programs were underway in several regions of the Province for barite, potash, limestone, and dolomite. During the year interest was expressed in several other commodities including sand and gravel, building stone, gypsum, zeolites, diatomaceous earth, and celestite. The locations of the industrial mineral exploration programs are shown on Figure 4.

Barite. Novex Mining and Exploration Co. Ltd., developers of a barite deposit at Pine Brook, Richmond County and owner-operators of a concentrator at Enon, Cape Breton County, began producing and shipping drilling mud grade barite (Fig. 4).

In the Lake Ainslie region of Inverness County, CCH Minerals Ltd. completed an exploration program which included mapping, geochemical sampling, geophysical survey, trenching and diamond drilling on the Scotsville barite property. South of Scotsville, International Mogul Mines selected a bulk sample for metallurgical testing purposes from their barite-fluolite property at Trout River.

Throughout the year interest in barite remained high with all known occurrences held under mineral exploration licence.

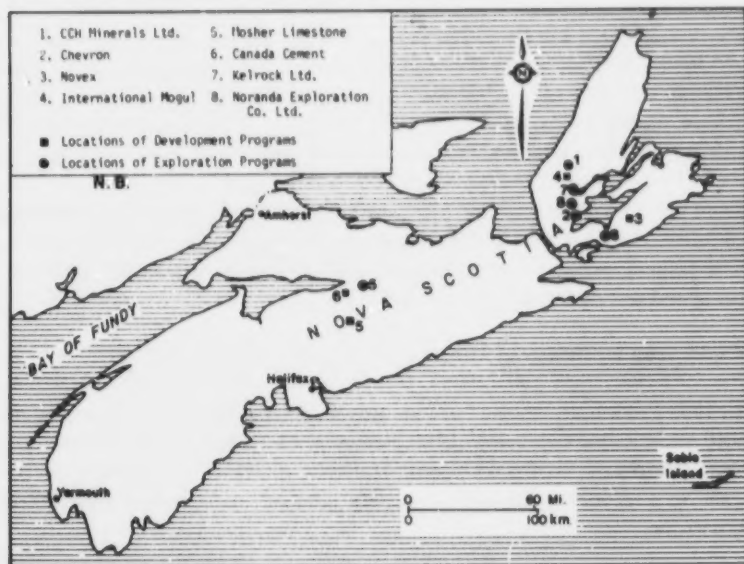


FIGURE 4. Locations of industrial mineral exploration programs.

Limestone and dolomite. Mosher Limestone Company Limited, producers of agricultural limestone in Nova Scotia, began development work on a dolomite deposit at Cooks Brook, Halifax County (Fig. 4). This same company completed a diamond drilling program on a high-calcium limestone deposit at East Mountain, Colchester County.

At Brookfield, Colchester County, Canada Cement Lafarge Ltd. completed a diamond drill program to substantiate limestone reserves adjacent to their operating quarry.

On Cape Breton Island, Kelrock Ltd. completed a surface sampling and chemical analyses program on their dolomite deposit at Churchview, Inverness County.

Potash. Chevron Canada Ltd. completed a gravity survey in the West Bay region of southern Cape Breton Island.

Noranda Exploration Co. Ltd. updated their geological data on the Ashfield area of Inverness County and the St. Peters region of Richmond County.

Exploration Monitoring

The function of the exploration monitoring team is to provide a liaison between the exploration industry and the Department. Two geologists, based in the Stellarton regional office, make regular visits to mineral exploration work sites to assist exploration companies where necessary and to examine work progress. The collection of statistical information about the mineral exploration industry is another important part of the work by the exploration monitoring group. The collection of the data is made possible by the use of reporting forms ("blue forms") which provide information on exploration activity (where, what, and by whom work was done; how much did it cost). These data allow the Department to have a better and more timely understanding of the mineral exploration industry's progress, finances, and employment.

Exploration Activity

Traditional mining operations in Nova Scotia (coal, gypsum, salt, aggregate, and limestone) maintained staff, production, and markets to an exceptional degree relative to most other mining areas in Canada during calendar year 1982. The value of mineral production rose to \$292 million from \$268 million in 1981. However, exploration activity declined significantly with an

estimated expenditure of \$4 million compared to a near record high of \$14.6 million in 1981. Exploration centred this year on base metals (tin, tungsten, copper, lead, and zinc), gold and barite. The Provincial moratorium on uranium, announced in September 1981, placed 467 028 acres (189 000 ha) of designated uranium licence areas on hold pending recommendations of the Uranium Inquiry — Nova Scotia which are expected during 1984.

The decision by Shell Resources and Gulf Minerals to disband their Canadian minerals exploration divisions has removed two of the major explorers from the Province. Shell did complete a very extensive exploration program in southwestern Nova Scotia during 1982 prior to selling the East Kemptville tin deposit and adjacent licences to Rio Algom.

Newcomers to the Province include Rio Algom, Billiton, Selco, and the Sullivan Mining Group. Billiton has taken over some of Shell's licences as well as staking new ground. The East Kemptville deposit and some additional ground is held by Rio Algom. Selco has been exploring parts of Cape Breton Island for base metals. Sullivan has picked up a block of claims under an option agreement in the Tangier Gold District.

Gold Exploration. Exploration expenditures in calendar year 1982 were down from the \$2 million spent on exploration and the \$1.5 million spent on property development during 1981, although there was a significant resurgence of activity in the last quarter based on increasing gold price. Northumberland Mines (Fig. 5) shut down its milling operation at Cochrane Hill during the spring of 1982 and is now evaluating cyanide leaching techniques with funding assistance from the Canada-Nova Scotia Co-operative Mineral Agreement. Louisbourg Property Holdings also suspended operations in the early spring at Mile Lake, as did Harrigan Cove Mining Company. Major programs by Patino in the Seal Harbour area and by Pan East Resources in central Nova Scotia and the Eastern Shore were postponed due to lack of funds, although Pan East is currently reactivating some programs.

An exploration program by Seabright Resources at Forest Hill got underway in late 1982 after being delayed most of the year. Seabright is also proceeding with plans to reclaim gold from old mill tailings at various locations in the Province. Recently, Seabright Resources has aggressively gathered claims in the Isaacs Harbour-Country Harbour region. Limited underground development work was continued by Edgar Horne and Byron Taylor at Renfrew, along with a drilling program conducted by Borcan Resources.



FIGURE 5. Locations of gold exploration programs.

Drilling for precious metals was begun during 1982 by Noranda on the Eastern Shore; by Dome Exploration in central Cape Breton; and by Whiteburn Precious Metals in southern Nova Scotia. Trenching was started by Fifteen Mile Stream Mining Company near Halifax. MEX (Hudgins, et al.) continues prospecting and sampling in southern Nova Scotia and the Eastern Shore. Hi-Pockets Exploration is investigating a property at Round Lake in the central part of southern Nova Scotia. Sullivan Mining Group and Hummingbird Resources have entered into an agreement to jointly explore in the Tangier Gold District. Outland Resources began an examination of several properties on the Eastern Shore.

Base Metals. Tin and tungsten exploration is continuing. The most active groups in 1982 were Shell, Esso, and Kidd Creek Mines. An intensive diamond drilling and overburden drilling program was conducted by Shell at East Kemptville during the spring (Fig. 6). This exploration work (along with the development of the large, low grade tin deposit previously outlined at East Kemptville) has been taken over by Rio Algom Mines Limited.

Another drilling program was completed by Shell at Caledonia in the central part of southern Nova Scotia. This is one of the properties transferred to Billiton.

Esso Minerals continued exploration for tin near Yarmouth and Halifax. Kidd Creek was active in the Musquodoboit Batholith area east of Halifax and near Lunenburg. Sulpetro Minerals was active in the Trafalgar area, east of Truro.

Copper, lead, and zinc exploration was also at a lower level during 1982. Esso continued a drilling program in the Pugwash area. The Company did more drilling on the Canada Wide Mines property at Gays River to establish reserves for a possible open-pit operation. The Gays River Underground Mine has closed permanently. Bluestack Resources has been conducting extensive geochemical survey work in the northeastern mainland region for base metals and barite. Further drilling was completed in the early summer by Sulpetro and Granges Exploration on their properties near Truro. A modest exploration project was completed by Amax in the Precambrian and Cambrian sedimentary and volcanic terrane of southeastern

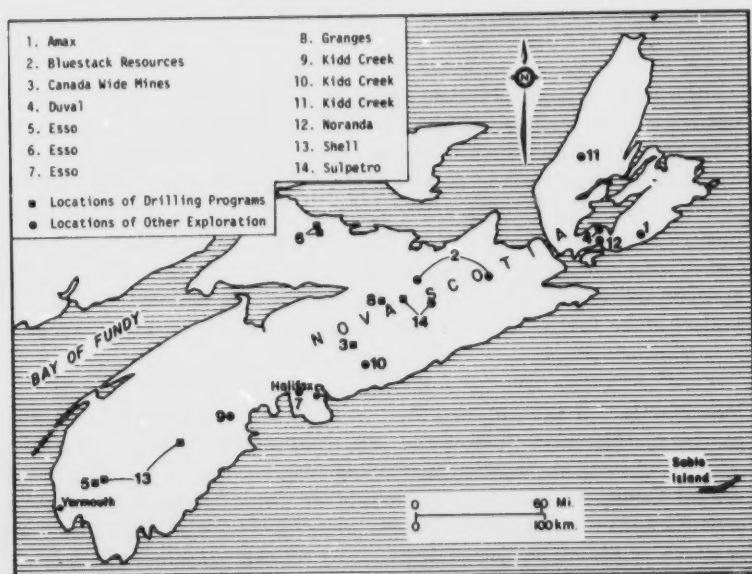


FIGURE 6. Locations of base metal exploration programs.

Cape Breton Island, but the company has now closed its regional exploration office in Sackville, New Brunswick, and is not active at present. Also in Cape Breton, Duval continued field work on the Sporting Mountain property.

Drill Core Libraries

Three new core storage buildings were constructed in Stellarton in 1982-83 through funding provided by the Canada-Nova Scotia Co-operative Mineral Agreement. These buildings provide approximately 2760 yards (2300 m) of additional core storage and laboratory space and are capable of holding some 990 000 feet (300 000 m) of palletized core. Laboratory and rock/soil storage facilities will be constructed within one of these structures in 1983.

An additional storage facility at Malagawatch, Inverness County equipped with climate control equipment for preserving salt/potash cores was turned over to the Provincial government by the Chevron-Irving joint venture group. This facility is being maintained complete with all potash cores collected by the joint venture group.

During the 1982-83 fiscal year some 342 814 feet (103 883 m) of drill core were collected for storage in the Stellarton core library and some 35 066 feet (10 626 m) were retained in the Malagawatch storage building (see Table 6).

Surveying

The location and elevation of all holes drilled by the Department, as well as base lines and grids needing accurate control points, are surveyed by the Departmental surveyor. Some plane table surveying of quarries, trenches, etc. is also done to assist staff geologists and engineers with mapping controls. The surveyor compiles the annual record of Departmental drilling data and assists the public in locating information from past drilling.

TABLE 6. Drill core acquisitions in Departmental Core Libraries for the 1982-83 fiscal year.

Company or Group	Location of Drilling	Amount of Core	
		feet	metres
Stellarton Core Library			
Coal Inventory Program	Sydney Mines, Cape Breton County	3 610	1 094
	Springhill, Cumberland County	8 900	2 697
	Sydney, Cape Breton County	3 393	1 013
Carboniferous Stratigraphy Program	Hants County	34 198	10 363
	New Ross, Lunenburg County	5 590	1 694
	Salmon River, Cape Breton County	11 943	3 619
Yava Mines (Phelps-Dodge)	Cobequid Mins., Colchester County	40 234	12 192
	Cumberland Basin, Cumberland County	16 094	4 877
	Walton, Hants County	12 077	3 658
Cominco et al.	Sterling, Richmond County	5 029	1 524
Shell Canada Resources Ltd.	South Mountain area of Kings, Digby, Annapolis Counties	37 419	11 339
	Tatamagouche, Colchester County	26 796	8 120
	Jubilee, Victoria County	27 159	8 230
Noranda Explorations Ltd.	Nappan, Cumberland County	34 198	10 363
	Kingsville, Inverness County	34 198	10 363
	St. Peters, Richmond County	7 125	2 159
Amax	River John, Pictou County	49 028	14 857
	Lake Enon, Cape Breton County	2 858	866
	New Glasgow, Pictou County	10 359	3 139
Domtar/Sifto Salt Div.	Stellarton, Pictou County	6 861	2 079
	Smithfield, Colchester County		
Malagawatch Core Library			
Chevron-Irving Joint Venture	Malagawatch, Inverness County	35 063	10 625
		377 878	114 509
TOTAL			

ENERGY RESOURCES DIVISION

J.R. Hornby, P.Eng., Director

The Energy Resources Division is accountable for the effective evaluation, promotion, and regulation of Nova Scotia's energy resources. The Division has centred its activities in three resource areas: petroleum, coal, and peat.

In 1982-83 considerable progress was made in strengthening the Petroleum Resources Section within the Division. In turn, this Section was heavily involved in offshore petroleum issues related to the implementation of the Canada-Nova Scotia Agreement on Offshore Oil and Gas Resource Management and Revenue Sharing and in issues resulting from the need to update certain parts of that Agreement.

In the coal and peat areas, exploration continued in the inventory program, complementing the growing interest being exhibited by various private sector companies in developing these resources. The Coal Development Section also placed considerable emphasis on encouraging and supporting research and development projects which will lead to greater utilization of these resources.

Petroleum Resources Section

C. Andrew Parker, P.Eng., Manager

Introduction

The Petroleum Resources Section is responsible for monitoring, evaluating, and regulating petroleum exploration and development activities onshore and in conjunction with Canada Oil and Gas Lands Administration (COGLA), offshore Nova Scotia.

The 1982-83 fiscal year proved to be busy and exciting. A great deal of activity focused on the petroleum potential of the Scotian Shelf due in a large extent to the signing of the Canada-Nova Scotia Agreement in March 1982. This has resulted in a significant increase in exploration activity. Following successful delineation of the Venture Structure near Sable Island, plans to develop this field were announced in 1982. There has also been a renewed interest in the petroleum potential onshore.

Offshore Exploration

The signing of the Canada-Nova Scotia Agreement established the Canada-Nova Scotia Offshore Oil and Gas Board as the primary agency for the management of the offshore region. A regional office of COGLA was established in Nova Scotia in 1982. This office is responsible to the Board for administration of activities in the offshore region.

The Petroleum Resources Section works closely with COGLA in the administration and monitoring of the offshore activities. The Section advises the Nova Scotia members of the Board on key issues, such as exploration agreements. In addition, the Petroleum Resources Section provides technical advice on offshore petroleum issues to other departments of the Provincial Government.

During the 1982-83 fiscal year, the Section reviewed exploration agreements involving 19 023 770 acres (7 698 658 ha) which were ultimately approved by the Board. These Agreements represent a total of 1.6 billion dollars in exploration expenditures to be spent over the next six years. The various blocks for which exploration agreements were announced are shown in Figure 7.

On commencement of drilling, progress on wells was monitored by the geological and engineering staff on a daily basis. In 1982-83 six offshore wells were completed, five of which were tested including the successful Venture B-43 appraisal well. Three of these wells, Banquereau C-21, South Venture 0-59, and Olympia A-12, were recognized as significant gas discoveries. Locations of the wells drilled are shown in Figure 8.

In 1982 Mobil Oil announced that they had met the threshold limit to make the Venture field commercial, and thus were initiating plans for development of the Venture field. This Section has been involved (with COGLA) in the review and monitoring of various stages of the development plan.

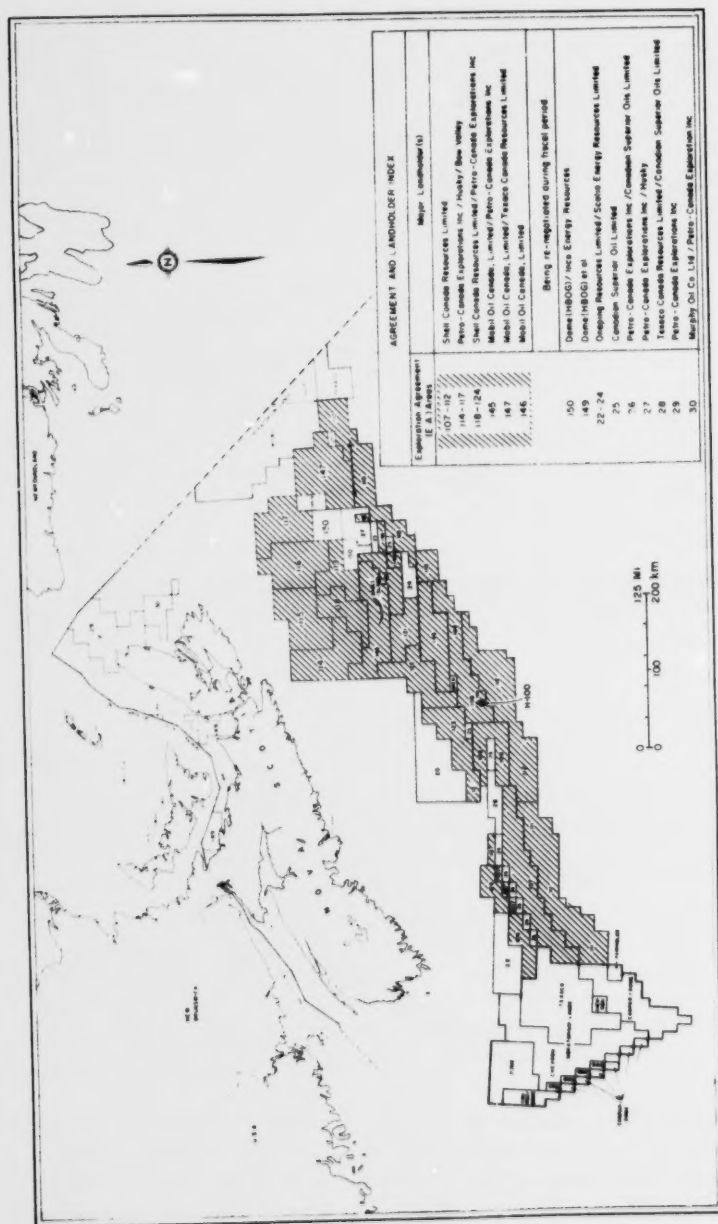


FIGURE 7. Location of offshore petroleum exploration agreement areas and landholder index.

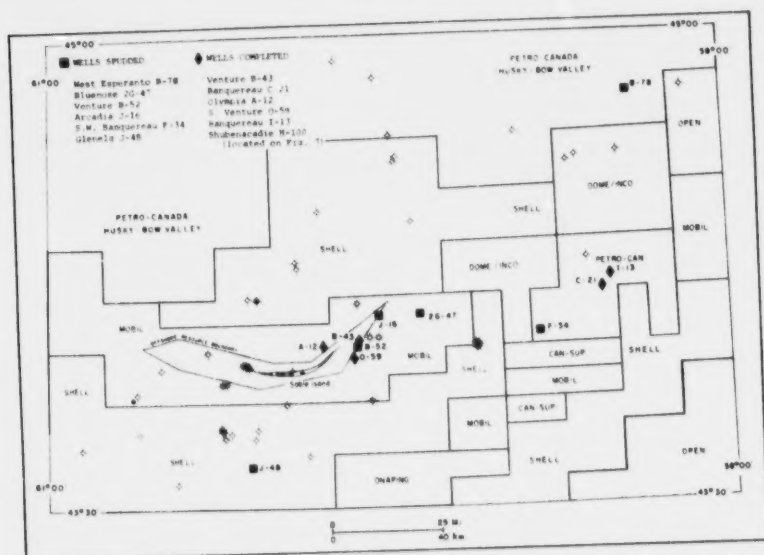


FIGURE 8. Location of wells spurred and completed in the Sable Island region.

Onshore Exploration

A number of oil companies are exploring onshore Nova Scotia. The Petroleum Resources Section evaluated and approved two seismic programs, totalling 131 miles (210 km), shot by Chevron in the Lake Ainslie region of Cape Breton and the Bay of Fundy. Licences were issued to Chevron Resources Limited, Tricentrol Oils Limited, Sigma Resources Inc., and MEX Explorations for exploration throughout the Province. The licences and the two seismic programs are identified in Figure 9. At the end of the fiscal year 8 029 821 acres (3 249 668 ha) were held under provincial license. The Petroleum Section was also involved in reviewing the current legislation for administration of onshore petroleum rights.

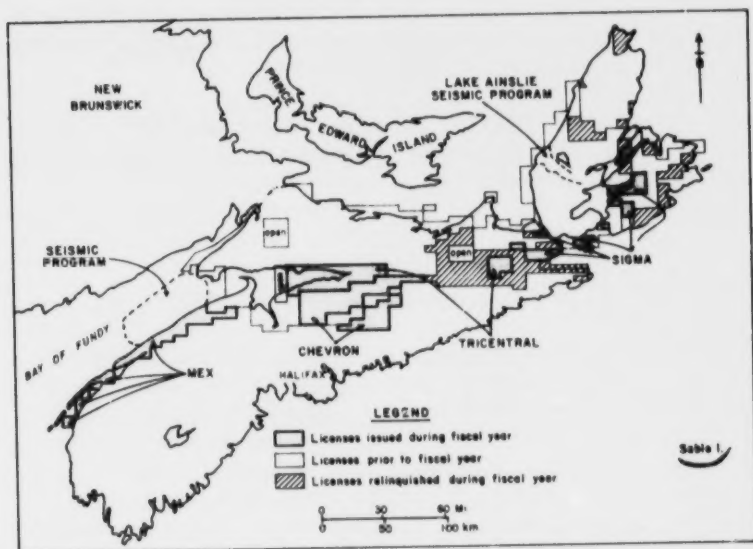


FIGURE 9. Location of onshore petroleum exploration leases and landholder index.

Other Activities

Various working cross-sections, correlations, and lithologic strip logs were drafted, maintained, and updated. Geological studies of Mobil's Venture wells were continued. New geological studies and comparisons of Mobil's Olympia and South Venture wells were initiated. The comparison of these wells with the Venture wells allowed a better understanding of the stratigraphy and structures in the Sable Island area. A licence map and several other offshore maps were prepared and made available for internal and public use. An offshore slide presentation was compiled to present the offshore story to interested individuals in other government departments, organizations, and educational institutions.

The Section compiled maps and set up displays at the 1982 CORE (Canadian Offshore Resources Exposition) Show and the 1982 Department of Mines and Energy Open House, both of which were held in Halifax. Our staff had active representation on the Sable Island Environmental Commit-

tee, the Canadian Petroleum Association/Petroleum Industry Training Society Course Examination and Certification Committee, and the Petroleum Technology Training Advisory Board Committee.

In August 1982, this Section produced the publication *Oil and Gas Exploration — Nova Scotia 1981-82*, which provides information on the oil and gas industry offshore and onshore Nova Scotia.

Coal Development Section

C.E. Bain, P.Eng., Manager

The Coal Development Section of the Energy Resources Division is responsible for assessment of the quality and quantity of coal deposits in Nova Scotia outside of privately held leases. The Section evaluates proposals for special coal exploration licences in addition to carrying out in-house coal and peat inventory programs. The Section monitors coal related research and development for application to the Provincial coal industry and participates in a number of committees and programs directed towards improved development and utilization of Provincial coal resources.

Coal Exploration

Activities in coal exploration for 1982 were centred in the Sydney, Pictou, and Springhill coalfields as shown in Figure 10.

Sydney Coalfield. In the Sydney coalfield, detailed exploration was carried out on a 2.1 mile (3.5 km) block of the Tracy seam at Broughton, Cape Breton County (Fig. 11). Thirty-two holes were drilled in the area and approximately 1.32 million tons (1.2 million t) of thermal coal have been outlined at a 12.5:1 strip ratio.

The Tracy seam averages 4 ft. (1.2 m) thick with an ash and sulphur content of 11% and 6% respectively. Calorific value on an "as received" basis is 12,812 Btu/lb (29.8Mj/kg).

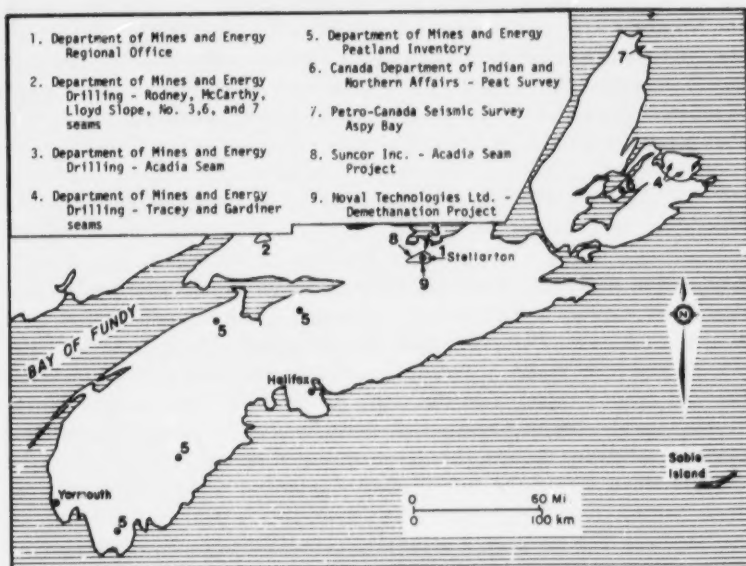


FIGURE 10. Project locations of the Coal Development Section and coal exploration activity.

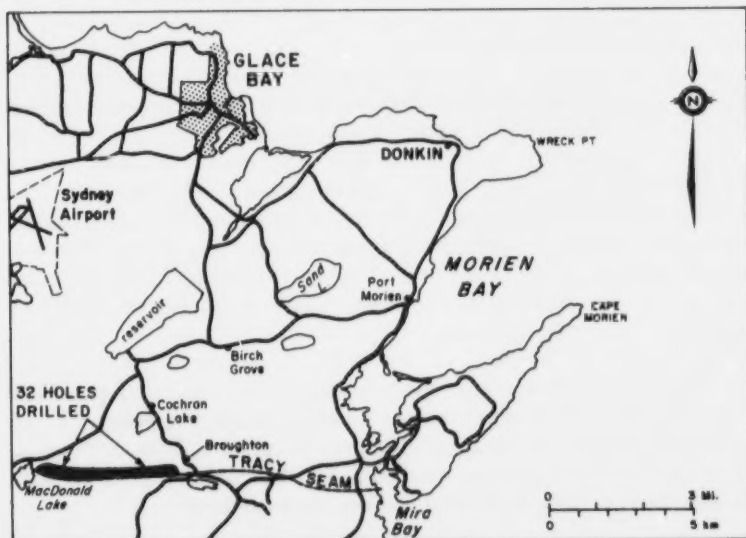


FIGURE 11. Location of Sydney coalfield work.

Springhill Coalfield. In the Springhill coalfield, drilling was conducted on the Numbers 3, 6, and 7 seams north of the town of Springhill. Results of the drilling have shown that the Number 3 seam holds no surface resource due to the poor quality of the seam. The Number 6 and 7 seams, although of favourable quality, indicate a rapid steepening of dip to the north (45°) and thus precludes the area as an open-pit site.

Two exploratory holes were also drilled in the Lloyds slope area for the Numbers 6 and 7 seams. Results were not encouraging and drilling ceased.

Exploration Initiatives. During 1982 two private companies held special licences to explore for coal in the Province. These include Suncor Inc., which conducted a seismic program to investigate the structures of the Acadia and Scott seams in Pictou County, and Petro-Canada which holds licenced ground offshore in the Aspy Bay area of Cape Breton. Noval Technologies continued their coal demethanization program in Pictou County and during the year the company, with financial assistance from the Canada-Nova Scotia Oil Substitution Agreement, drilled an additional demethanization well that underwent a multi-frac to increase production of methane gas. This program is being closely monitored by Noval and results will help indicate the financial viability of insitu coal seam demethanization in the Province.

Research and Development

During 1982 the Committee on Atlantic Coal (CAC) was formed to provide a forum for exchange of information between members of the coal research and development community and to review and coordinate coal research and development initiatives. The Committee, under the chairmanship of the Deputy Minister of the Nova Scotia Department of Mines and Energy, formed several working groups which examine, evaluate, and make recommendations to the CAC on specific proposals or projects. To date there are working groups on coal beneficiation, coal-liquid mixtures, and coal pyrolysis.

In addition to this, the Province also participates financially on a 50-50 basis with the Federal government in a coal liquefaction investigation and evaluation program being carried out by the Nova Scotia Research Foundation. The Section is also involved in a coal beneficiation program with funding from both the Provincial and Federal governments.

Peatlands Inventory

The Peatlands Inventory Program continued investigation of the fuel peat potential of the Province. Work was done in Queens and Shelburne Counties in southwestern Nova Scotia and also on a small concentration of bogs in Hants County (Figure 10).

In southwestern Nova Scotia the mapping of the largest concentration of peatlands in the Province has been completed. In this area 41 750 acres (16 700 ha), or 44% of the total peatland present, has been classified and indicated a total of 489.2 million cubic yards (374 million m³) of peat. This represents 70.4 million tons (64 million t) of peat at 50% moisture of which 62% or 44 million tons (40 million t) falls within the fuel peat category (H5-10).

Extrapolation of these data to the remaining peatlands in southern Nova Scotia indicates 157.3 million tons (143 million t) of peat of which 108.9 million tons (99 million t) is considered fuel peat.

In Hants County 5500 acres (2200 ha) or 38% of the total peatland area was surveyed. The results have indicated 14.3 million tons (13 million t) of peat of which 43% or 6.2 million tons (5.6 million t), is considered fuel peat. Extrapolation of these data to remaining peat bogs in the County indicates approximately 16.5 million tons (15 million t) of fuel peat in Hants County.

The Peatland Inventory will continue assessment of the Province's peat resources in 1983 and 1984.

ENERGY MANAGEMENT DIVISION

J. French, Director

The Energy Management Division has two major areas of responsibility:

- 1) The evaluation of, and planning for, developments and policies that may affect the energy supply and demand in Nova Scotia and
- 2) the delivery of comprehensive energy management, conservation, and renewable energy programs to all sectors of the Provincial economy.

These responsibilities are met through the activities of three sections: Economics and Statistics — providing energy planning and evaluation; Energy Engineering — delivering energy management, renewable energy, and conservation programs primarily to the business and public sectors; and Public Information — providing energy conservation programs for the residential sector.

Highlights

Activities are funded both wholly by the Province of Nova Scotia and by the Province in co-operation with the Federal Government. In the fiscal year 1982-1983, the Energy Management Division negotiated a one year extension of the five year, \$24.8 million Canada-Nova Scotia Agreement on Energy Conservation. The Division also negotiated the Canada-Nova Scotia Agreement on Industrial Energy Conservation. This agreement, signed on June 3, 1982, provides for the continuation and expansion of the Canada-Nova Scotia Enersave Program to March 31, 1984.

The Division initiated a number of important studies and projects designed to provide the essential framework for Provincial response to the impending development, distribution, and transmission of Nova Scotia natural gas later in the decade.

The Division co-ordinated the Province's participation in National Energy Board (NEB) hearings in Ottawa during May-July, 1982, on the Arctic Pilot Project. This is a proposal by a consortium of companies to liquefy Arctic natural gas and deliver it to Eastern Canada. A six volume study produced for the Provincial Government documented a strong case for selection of a Nova Scotia location as the southern terminus of this Project.

The Division also prepared analyses of the impact of federal energy policies, including the National Energy Program Update, in June, 1982, on energy pricing, supply, and demand in Nova Scotia.

Programs administered by the Engineering Section continued to be heavily patronized by business and the public sectors during the 1982/83 fiscal year. Computerized energy audits of 344 industries, commercial establishments, and institutions were completed. These audits identified a potential annual energy savings of \$2.5 million. Sixty-one Industrial Retrofit Program grants worth \$1 million were approved for energy conservation projects. Another 70 grants worth \$329 222 were paid under the Consulting Follow-up Program for energy conservation studies. An additional \$902 578 was committed under the Pilot Projects Program towards the development of new energy technologies and renewable energy sources.

In the residential sector, the Division continued to receive and respond to public demand for advice, information, and publications on all aspects of residential energy conservation.

The Division also monitors the energy supply and demand situation and produces an annual publication on this subject. Primary energy consumption in Nova Scotia declined by 9.2% in calendar year 1982. This is the largest such decline on record since statistics were first recorded in the 1960s. Primary energy consumption is the total energy input into the economy and includes petroleum, coal, electricity, and natural gas.

Sales of refined petroleum products dropped nearly 10% with sales in calendar year 1982 of 25.9 million barrels (4120 million l), down from 33.4 million barrels (5314 million l) in 1978. This reflects the success of the Province's oil substitution and energy conservation programs. The decline occurred despite growth in the real provincial product in 1982.

Economics and Statistics Section

V. Harnish, Manager

Introduction

The Economics and Statistics Section evaluates and analyzes issues relating to energy developments and policies of a Provincial, national, and international nature. The Section also administers a comprehensive energy planning program and is responsible for statistical reporting of energy supply and demand in Nova Scotia.

Staff of the Section prepare reports, publications, and computer models and manage the preparation of reports by private consultants. Depending on the nature of the material, these are made available to other ministries, the public, energy corporations, and other governments and agencies. The Section also prepares and co-ordinates submissions on behalf of the Province to regulatory authorities such as the National Energy Board.

Activities

During the 1982-83 fiscal year, energy activities of the Section became increasingly concentrated on the impact of development of the Province's offshore resources, and the Venture Gas Field in particular. Analyses of the economic implications of offshore development intensified and broadened.

The Section managed production of a study by private consultants on economic opportunities in Nova Scotia that would result from offshore gas production. This study, in draft form at fiscal year end, was commissioned to provide a basis for the development of government policy and actions to expedite introduction of natural gas safety standards and to obtain maximum economic benefit.

In December 1983, proposals were called on two major studies that will be managed by the Section, with participation of other Provincial and Federal Government departments. *Propane Prebuild Feasibility Study* will examine the economics of prebuilding a natural gas market in Nova Scotia using propane fuel until natural gas becomes available. The *United States Gas Market Evaluation* will estimate potential sales of Venture gas in Eastern United States markets over a 20 year period. Both these major reports will be completed in fiscal year 1983/84. Both studies will play an important role in licensing of Venture gas exports by the National Energy Board (NEB).

Staff also co-ordinated Nova Scotia's submission to the NEB on the Arctic Pilot Project, a plan to move liquefied natural gas (LNG) by tanker from the Arctic to Southern Canada. A major report with five appendices and expert testimony was presented to the NEB on behalf of a Nova Scotia site for the multi-million dollar southern terminal of the Project.

The Section co-sponsored, with the Public Information Section, five seminars and a concluding Conference entitled *Energy Options for Atlantic Canada* that was held at Acadia University in the fall of 1982.

Numerous background reports and position papers, on topics such as natural gas transmission and distribution and conversion of commercial vehicle fleets to propane, were prepared for the Department in fiscal 1982/83.

The Section has an ongoing commitment to keep the Department updated on energy statistics and trends. A computer programmed fact sheet containing data on energy supply and demand, pricing, coal production and use, electricity, and petroleum products is produced monthly. Each year, a 90-page *Energy Statistical Profile* of the Province is prepared and published.

The Energy Planning Project under the Canada-Nova Scotia Agreement on Energy Conservation is administered by the Section. Under this Project, the Section is co-ordinating a Load Management Program, funded under this Agreement, in which the Nova Scotia Power Corporation is gathering load data and assessing the potential of direct load control and various forms of indirect load management such as marginal cost based, time-differentiated pricing.

Public Information Section

J. Gordon, Manager

Introduction

The Public Information Section is responsible for promoting the more efficient use of energy at the residential level through the provision of factual and motivational information and programs on residential energy conservation. The Section also serves the information needs of the Division by producing technical and promotional printed and audio/visual material.

Public Information's mandate also requires it to monitor and respond to topical residential energy conservation issues and to assess and survey public attitudes towards energy conservation and related energy issues.

Information and programs are provided by the Section and by outside organizations with the financial and administrative support of the Section. Activities are funded directly by the Nova Scotia Department of Mines and Energy and jointly under the public information component of the Canada-Nova Scotia Agreement on Energy Conservation. The Section is also responsible for public information and promotion of activities funded under this Agreement.

Operations

Each year the Section receives thousands of requests from the public for information. Requests arrive in one of several ways. The ENER-INFO phone line (1-424-5727), a Province-wide, toll free service, accounts for the majority of information requests. Written requests, referrals from other agencies, and response to Section advertising and promotional material account for the remainder. Information provided ranges from the very general to the extremely specific and covers such topics as insulation, condensation, air sealing, new home construction, and car fuel economy.

The Section also participates in major energy related trade shows each year. The ENER-INFO display used at these events is heavily patronized, numerous questions are answered by staff, and hundreds of publications are distributed. In addition, staff give seminars to smaller groups on topics such as wood heating, microwave cooking, air sealing, insulation and furnace servicing. About ten such seminars were given in the past fiscal year. Staff also respond to requests for site inspections of homes with major problems. About a dozen such inspections, followed by recommendations, occurred in the last reporting period.

Publications and posters are distributed free of charge to Nova Scotians and audio/visual material is made available on a loan basis. In addition to previously published material, the Section produced and distributed new publications dealing with portable heaters and car fuel economy in the past year. Section staff also cooperated in the production and design of publications for other sections, including *1980 Energy Statistical Profile*, *Waste Heat Recovery Seminar Proceedings*, and National Energy Board submissions. One publication deserves special mention. *Calories — Making Every One Count* is a 46-page book designed for use as a teaching source book particularly suited to Home Economics and Consumer Education. This book was cost-shared with the Federal Government and has received extremely favourable response from the teaching community in Nova Scotia and elsewhere.

Energy Awards: Nova Scotia Energy Awards is an annual program that features presentation of awards by the Minister of Mines and Energy for outstanding contributions to energy management. Following is a list of 1982 Nova Scotia Energy Award winners:

Category 1, Large Manufacturing

Volvo Canada Ltd., Halifax.

- 26% energy reduction/unit of production

Category 2, Business, Commerce, and Non-Government

- a) Cape Breton Hospital/Braemore Home Corporation, Sydney.
 - energy consumption reduced 50% by switching from old steam generator to new hot water systems
- b) Joseph Howe Building, Centennial Management Ltd., Halifax.
 - reduced energy consumption by 31%/unit of rental space

Category 3, Governments**City of Halifax**

- a wide variety of effective programs and energy-saving measures have been undertaken by the City of Halifax, particularly more efficient street lighting, a resource centre and energy-efficient greenhouses.

Category 4, Organizations and Community Projects**Northwood Centre, Halifax**

- utilizing a series of lighting changes, fuel switching, and process changes, the Halifax Senior Citizens Housing Corporation effected large savings in their energy consumption.

Category 5, Individuals**Mark Haynes, Boylston, Guysborough County**

- participation in local energy conservation events, development of solar hot water collectors, and promotion of energy conservation both professionally and personally, earned Mr. Haynes this award.

Telidon. The Public Information Section represented the Department in a trial use of Telidon, the Canadian video-text system. The Telidon program, produced by staff, in co-operation with the Department of Government Services, is available through independent terminals provided in Halifax by Maritime Telephone and Telegraph and focuses on practical energy management topics.

Committee Memberships. Staff represented the Department on numerous Committees, including Ureaformaldehyde Task Force, Maritime Energy Education Coordinating Committee, Canadian General Standards Board (Standards for Insulation Contractors), and the Energy Technical Committee of the Roads and Transportation Association of Canada.

The staff of the Section provided complete information, printing, and advertising services to the Division. This took the form of about 30 press

releases on Division activities, seminar promotion through brochures and advertising, numerous small printing tasks, and advertising for programs such as the Small Scale Energy Demonstration Grant Program. The Section also supervised extensive advertising and promotional campaigns under the Agreement.

Initiatives. Several major initiatives were mounted by the Section in 1982-83 under the Canada-Nova Scotia Agreement on Energy Conservation. The Autosave Program was one of the more successful. This Program offered emission analysis and carburetor adjustment to improve fuel economy. Operated by the Centre for Energy Studies (CES), the Program tested about 4000 vehicles at 18 locations in Nova Scotia between the months of June and October. Additional vehicles were tested by CES in Halifax with support of the public information component of the Agreement.

The Section also arranged for a comprehensive survey of Nova Scotians' attitudes towards energy conservation. This survey, conducted in May 1982, by outside consultants, identified the energy issues of importance to Nova Scotians and the information and delivery systems preferred by residents.

Education. The Section also plays a lead role in providing public school energy education. Its cost-shared Energy Education program provided classroom presentations to 20 000 or more children in 130 schools in the fiscal year 1982-83. A substantial number of requests from students for information on energy are also handled by staff.

Engineering Section

C. Ryan, P.Eng., Manager

Introduction

The Engineering Section is responsible for five major programs: Enersave, Pilot Projects, Cogeneration and Waste Heat Utilization Program, Energy Test and Information Centre (ENERTIC) Program, and the Small Business Energy Analysis and Grant Program. All five Programs are funded under cost-shared agreements between the Province and Canada. One new cost-shared Program, the \$1.25 million Small Business Energy Analysis and Grant Program, was initiated under the Canada-Nova Scotia Agreement on Energy Conservation in fiscal year 1982-83. This Program will offer energy audits of businesses and non-government institutions too small to be consi-

dered for Enersave audits. Grants will also be provided for conservation retrofits recommended by the energy analysis. The Program will become operational in the summer of 1983.

The section also does technical studies and monitors technological developments in the fields of energy conservation and management and renewable energy resources. The goal of all programs and activities of the Section is the reduction of Provincial energy use, particularly of petroleum products, and increases in the efficiency of energy use.

Activities

Enersave Program. On June 3, 1982, a new Agreement called the Canada-Nova Scotia Agreement on Industrial Energy Conservation was signed between the Provincial and Federal Governments. This Agreement replaced the former Enersave Agreement and it will run until March 31, 1984. It provides for continuation of the Enersave Program and Consulting Follow-up Program.

The Enersave Program continues to provide energy audits, financial assistance to hire consultants, and energy conservation seminars to major sectors of the Provincial economy. From April 1, 1982, to March 31, 1983, 344 energy audits were completed on establishments with annual energy bills of \$11.3 million. Potential annual energy savings of \$2.5 million were identified, an average of 21.8 per cent. A summary is provided in Table 7. A third computer equipped Enersave audit bus was added in the 1982/83 fiscal year to the two previously in operation.

During the reporting period, Enersave's Consulting Follow-up Program paid 70 grants worth \$329 222 for energy conservation studies at industries, businesses, and institutions. These studies are undertaken following an energy audit to prepare a detailed program for implementation of energy conservation and management measures.

Industrial Retrofitting Grant Program. This Program provided financial assistance to industries, institutions, and some types of commercial establishments to implement energy conservation and fuel substitution projects. Direct grants reduced the payback on most projects to three years, a level that most businesses find attractive.

TABLE 7. Enersave Program (1982-83 fiscal year)

	Industrial	Commercial	Institutional	Total
Audits	31	161	152	344
Value of Energy Use:				
Electricity	\$ 708 800	\$2 915 550	\$1 272 960	\$ 4 897 310
Oil	1 286 100	2 463 230	2 257 100	6 006 430
Other	21 600	21 050	366 664	409 314
TOTAL	<u>\$2 016 500</u>	<u>\$5 399 830</u>	<u>\$3 896 724</u>	<u>\$11 313 054</u>
Average/site	\$65 048	\$33 539	\$25 636	\$32 887
Potential Savings:				
Value	\$527 460	\$1 067 370	\$869 250	\$2 464 100
Percentage	26.2%	19.8%	22.3%	21.8%

During the period, 61 grant applications were approved and a total of \$1 million was offered in assistance. Companies receiving grants contributed a proportionate share, resulting in an investment of more than \$2 million as a direct result of this Program.

Projects funded included building insulation, heat recovery, destratification equipment, and wholesale changes to energy supply systems and plant design. The types of establishments that participated in the program were equally varied. This Program was terminated on March 31, 1983, and was replaced by the Atlantic Energy Conservation Investment Program, operated by the Federal Government.

Pilot Projects Program. This Program encourages the development, demonstration, and use of new energy conservation and renewable energy sources. The Program provides financial and technical assistance for projects using innovative energy conservation and management technologies and those using any of the renewable energy sources. Financial participation of those proposing the project is required. The amount of assistance varies with the financial risk involved. The program's objective is to introduce new energy technologies and increase the use of renewable energy sources in Nova Scotia thereby broadening the range of energy sources and energy technologies used in the Province.

Between April 1, 1982, and March 31, 1983, 15 new projects were approved, resulting in program commitments of \$902 578. Actual cash flow for the period was \$847 055. Program activity is summarized in Table 8.

TABLE 8. Project types for Pilot Projects Program

Project Type	No. of Projects	Program Commitment	% of Total
Energy Conservation			
Buildings	5	\$428 600	47.5%
Transportation	2	\$ 25 678	2.8
SUBTOTAL	<u>7</u>	<u>\$454 278</u>	<u>50.3</u>
Small Scale Demo Program	1	\$350 090	38.8
Biomass	3	43 400	4.8
Solar	2	39 010	4.3
Wind	1	6 300	0.7
Hydro	1	9 500	1.0
SUBTOTAL	<u>8</u>	<u>\$448 300</u>	<u>49.7</u>
TOTAL	<u>15</u>	<u>\$902 578</u>	<u>100%</u>

Several projects deserve special mention. A \$100 000 program to demonstrate energy conservation projects at eight schools in Nova Scotia was completed in the fiscal year. Overall, more than 16 energy conservation technologies were used. All had low initial cost and less than five-years payback on investment.

Program assistance of \$250 000 was allocated in 1982/83 fiscal year for a Home Energy Audit Analysis Trial. Under this Program 12 individuals will be trained at the Nova Scotia Institute of Technology to conduct energy analysis on residential dwellings. About 120 homes will then be selected and offered free energy analysis by the trained staff. A further 30 representative homes will be offered assistance with implementing the results of the energy analysis. Program activity will be concentrated in the fall of 1983.

Using funds from the Pilot Projects Program, the Small Scale Energy Demonstration Program was offered in summer/fall of 1982 for the third year in succession. The Program is a competition based on proposals from individuals and groups for financial assistance with the cost of demonstrating small scale renewable energy and energy conservation technologies. Seventy-five projects were selected by a panel of independent judges from 441 proposals submitted. Assistance totalled \$350 090 for projects. A summary of approved projects is provided in Table 9.

TABLE 9. Approved projects — Small Scale Energy Demonstration Program

Technology	No. of Projects	Per Cent	Assistance	Per Cent
Attached Solariums	18	24	\$ 96 000	27
Solar Greenhouses	3	4	\$ 16 000	5
Solar Domestic Hot Water	16	21	\$ 48 155	14
Solar Pool Heating	1	1	\$ 2 100	1
Solar Space Heating	5	7	\$ 30 000	9
Wind Energy Convertors	7	9	\$ 48 347	14
Heat Pumps	6	8	\$ 31 546	9
Waste Heat Recovery	3	4	\$ 18 767	5
Innovative Construction	3	4	\$ 4 460	1
Biomass Combustion	1	1	\$ 4 400	1
Solar Lumber Kilns	3	4	\$ 11 555	3
Hydro-electric	3	4	\$ 24 000	7
Insulating Curtains	6	8	\$ 14 760	4
TOTALS	<u>75</u>	<u>99%</u>	<u>\$350 090</u>	<u>100%</u>

Cogeneration and Waste Heat Utilization Program. The Program's objectives are to identify the opportunities for using cogeneration and waste heat recovery in Nova Scotia and to promote the use of these technologies through seminars, demonstrations, and grants for evaluations of specific sites.

Following completion in the previous fiscal year of a major study identifying opportunities for these technologies, the Program held a series of seminars in Nova Scotia in the 1982/83 fiscal year to promote these technologies. More than 200 professionals attended these seminars and the combined proceedings were published in book form and distributed.

Two major site evaluations were carried out in fiscal 1982/83. The evaluations at Farmers Co-Operative Dairy Limited and Hostess Foods Limited will lead to the installation of waste heat recovery technology in fiscal year 83/84. A new Program to cost-share feasibility studies for waste heat recovery projects was established. The Waste Heat Recovery Project Evaluation Assistance Program has a budget of \$300 000 to the end of the 1983/84 fiscal year.

ENERTIC. The Energy Test and Information Centre consists of two distinct operations: a solid fuel testing facility at the Technical University of Nova Scotia and an energy information resource centre at the Nova Scotia Research Foundation Corporation. Services are provided by the two organizations through contracts with the Department.

A new brochure promoting ENERTIC's activities and services was prepared and distributed during 1982/83 fiscal year. This has been successful in increasing the use of ENERTIC's services, especially the information side, which provides energy-related information to both the public and private sectors. This service also encourages the development of technical innovation by carrying out preliminary evaluations of ideas and inventions. During the 1982/83 fiscal year, 224 requests for information were handled, four inventor's ideas were assessed, and 253 documents were added to the database.

On the testing side, six stoves and four fireplaces were tested for performance while another three furnaces and two stoves, all prototypes, were evaluated for performance and safety on behalf of industry. In addition, two groups of tests were carried out in co-operation with the Wood Heating Alliance and Canadian Combustion Research Laboratory on the development of solid fuel test standards. The flame tunnel was completed and a number of prototype nozzles and burners were tested for burning efficiency. In addition boiler efficiency testing was offered on a contract basis to industry. This work was done by the Centre for Energy Studies, Technical University of Nova Scotia, on behalf of ENERTIC.

Other Activities. The Engineering Section was involved in several other activities in 1982/83 fiscal year. Staff performed inspections on solar and wind energy equipment projects on behalf of the Provincial Tax Commission under the Sales Tax Rebate Program.

The Section produced about 30, four pages descriptions of projects completed under the Pilot Projects Program. About 20 000 of these sheets have been printed and circulated.

Staff were involved in a number of seminars in fiscal 1982/83. Enersave staff held seminars on energy conservation in the fish processing and tourism industries while Pilot Projects Program staff held a seminar on the use of waste wood heating in agriculture. These seminars were well attended.

In addition, staff made more than one dozen presentations to small groups on programs and projects assisted and undertaken by the Section.

The Section participated in the steering committees for a number of studies and reports, including the Wood Study and Transportation Overview Study. A major report, *Energy Generation from Municipal Solid Waste*, was received by the section in fiscal year 1982-83. This report has been summarized and will be distributed to all people interested in the study.

ADMINISTRATION DIVISION

C.R. James, RIA, Director

The Administration Division provides the Department with financial and personnel management and with legal, cartographic, and administrative services.

The duties and functions of the Division are divided within the following Sections: Accounting, Mineral Taxation and Fiscal Planning, Personnel and Administration, Legal, and Cartography.

During the past year, further enhancements were made to the Department's management information systems. Changes were implemented to improve information available to managers for budget control and planning.

The Division is responsible for the collection of royalties and mineral taxes and for management and evaluation of government funded coal mine/miner assistance programs.

The Administration Division provides accounting services for Novaco Limited. The Director is Secretary Treasurer of this Crown Corporation. During the year, responsibility for providing accounting services for Nova Scotia Resources Limited (NSRL) was transferred from the Department to NSRL.

Accounting Services Section

Ken Faulkner, RIA, Manager

The Accounting Services Section performs financial and statistical services for the Department.

The Section is responsible for maintaining and updating systems for Departmental expenditures and recoveries. Monthly financial reports are made available to Departmental managers for evaluation of their programs.

Cost shared programs administered by the Department are processed by this Section and forwarded to other Provincial and/or Federal Departments for payment.

During the past year, enhancements were made to the Management Information System so that more personnel and financial information was available to managers.

Mineral Taxation and Fiscal Planning Section

Blair McMullin, Manager

The Mineral Taxation and Fiscal Planning Section is responsible for maximizing mineral royalties and taxes, the Departmental Budget and Control, and the Coal Mine/Miner Financial Assistance Programs.

The Section also provides accounting services for Novaco Limited, a Provincial crown corporation.

Mineral Royalties and Taxes

The Section manages the royalty and tax provisions of the Mineral Resources and Gypsum Mining Income Tax Acts. The amount of royalties and taxes for fiscal year 1982-83 is shown in Table 10.

During the year a review of all tax royalty structures was started.

TABLE 10. Royalties and taxes for the fiscal year ending March 31, 1983

Commodities	Amount
Gypsum	\$ 625 984.65
Coal	870 335.08
Salt	212 306.75
Other	33 820.15
TOTAL	\$ 1 731 446.62

The revenue from royalties and taxes reported by the Department are shown for a 19 year period in Figure 12. The jump in revenue in 1975 coincided with the passage of the Mineral Resources Act of 1975 and the change in the royalty and tax regulations.

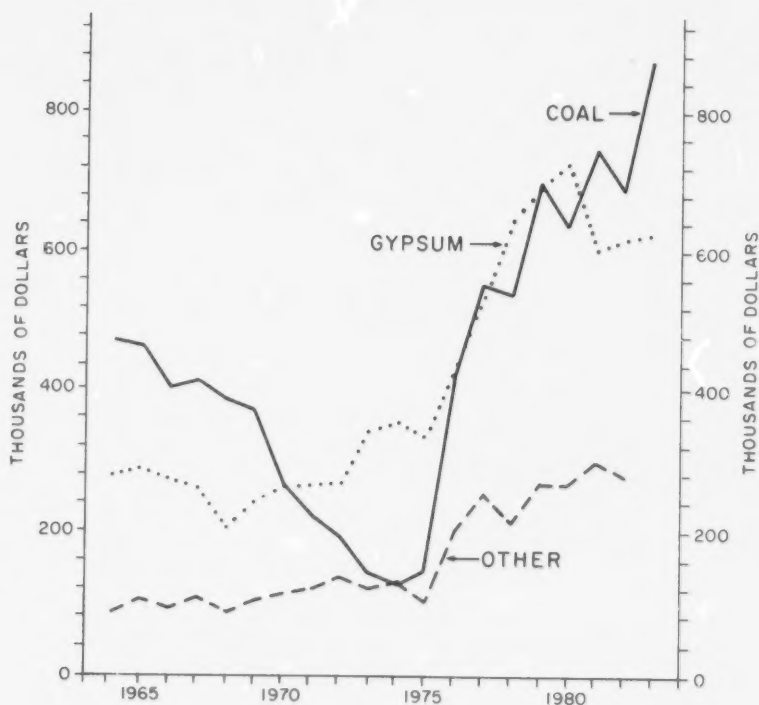


FIGURE 12. Historical review of royalties and taxes.

Departmental Budget and Control

As the Budget Team leader the Section manager is responsible for co-ordinating the departmental budget process.

During the year the Budget Team has implemented changes to facilitate the budget process and to make it more closely relate the accounting for expenditures to the approved management plan.

Mine/Miner Financial Assistance Programs

Three financial programs are administered by this Section: Independent Coal Mines Subsidy Program, the Coal Miners Pre-retirement Leave Program, and the DOSCO 1923 Pension Program.

The Independent Coal Mines Subsidy Program has been in operation since 1968. The Program provides financial assistance to independent coal mine operations providing a measure of economic stability to communities heavily dependent upon the continuance of the industry. Subsidies in excess of \$850 000 were granted during the past fiscal year to the two remaining participants in the program: Evans Coal Mines Limited of Inverness and Drummond Coal Company Limited of Westville.

The Section, on behalf of Novaco Limited and with the aid of Accounting Services staff, administers the Coal Miners Pre-Retirement Leave and DOSCO 1923 Pension Programs. The Coal Miners Pre-Retirement Leave Program is designed to alleviate the hardships of employees who are forced to leave the mine work force due to a cutback in production or closure. The DOSCO 1923 Pension Program is payable to eligible former employees of Acadia Coal Company Limited who retired by December 31, 1976.

During this fiscal year, approximately 61 participants received pensions, and 108 received benefits under the Pre-Retirement Leave Program. Benefits in excess of \$425 000 were granted for these programs.

Personnel and Administration Section

P. Edwards, Manager

This Section provides a staff service to all Divisions of the Department by assisting them on personnel issues. The responsibilities of the section include the provision of recruitment programs, establishment and maintenance of performance appraisals, career development training, personnel and payroll documentation, and the maintenance of employee files.

The Section is also responsible for the continual upgrading of office and administrative services for the Department.

The Section provided support in recruiting a number of staff in the petroleum and energy conservation areas. Changes in the personnel of the Department are shown in Table 11.

An information kit was developed for new employees which outlined general information about the Department such as benefits and terms and conditions of employment.

Throughout the year several staff members attended various in-service and external training opportunities and general development courses. The courses attended concerned effective telephone communication, making effective presentations, staffing for managers, career planning, and staff relations for managers.

A new and comprehensive organizational chart for the Department was developed and procedures were implemented for reporting and recording staff leave and absence.

TABLE 11. Personnel changes during the 1982-83 fiscal year.

Appointments	Separations
Janet Amiro	Lennart Landgren
Geoffrey Braybrooke	William McCann
Harry Chapman	Wynne Potter
Joan Collier	Eva Tracey
Paul Harvey	
Jack MacDonald	
Katherine MacDonald	Retirements
Andrew Parker	
Gayle Regan	Ralph Murray
Peter Rogers	
Gerard VanHeuvan	
Philipp Welford	
Marilyn Wilson	

Legal Services Section

N. Ripley, Manager

A solicitor provides legal advice on Departmental matters including mineral and petroleum licensing, interpretation of legislation, and Memoranda of Understanding. She is responsible for drafting and/or approving all contracts and letters which could have legal implications. Assistance is provided in researching and preparing evidence in matters before the National Energy Board.

Cartographic Services Section

D. H. Bernasconi, Manager

The Cartographic Services Section provides both drafting and photographic services for all Divisions of the Department. The drafting component is responsible for the production of a wide variety of geological and energy related drawings for use in publications and visual presentations. This unit also produces and maintains approximately 300 mining claim maps for plotting areas held under the Mineral Resources Act and the Petroleum and Natural Gas Act.

The photographic unit is responsible for the reproduction of material for publication purposes, field photography, slides for lecture purposes, and photographs for displays.

In addition to supplying the general photographic requirements of the various Divisions of the Department, this Section was able to provide assistance to other government departments and mining interests during the year.

FINANCIAL INFORMATION

The Department of Mines and Energy employs 140 people and had forecast expenditures of \$35.29 million in fiscal year 1982-83. In this part of the Annual Report the expenditures of each Division are described. Additionally the amount of assistance which the Department gives to such programs as Power Rate Assistance and Oil Substitution is shown.

The financial information is presented under two headings: "Operations" and "Assistance." Under "Operations" the information is arranged by Division. Subheadings under each Division (Budget Subject Title) may not be the same as the Section name. Some Sections in a division are grouped together under one budget subject title while other Sections in another Division may be represented by several budget subject titles. All of the budget subject titles reflect the mandates which each Division has.

The second heading "Assistance" describes the financial assistance given to programs supported by the Department.

Information provided here was taken from the 1983-84 Estimates Book.

Operations

Division Activity Budget Subject Title	Actual Expenditures 1981-82	Forecast Expenditures 1982-83
ENERGY MANAGEMENT DIVISION		
1. Energy Statistics	\$ 43 334	\$ 46 800
2. Enersave Program	—	750 000
3. Energy Planning	353 879	217 500
4. Public Programs and Promotion	145 337	190 000
5. Energy Engineering	102 855	119 100
6. Energy Publications	56 625	35 000
TOTAL Energy Management Division	\$ 702 030	\$1 358 400

Operations Continued

Division Activity Budget Subject Title	Actual Expenditures 1981-82	Forecast Expenditures 1982-83
ADMINISTRATION DIVISION		
1. Office of the Minister and Deputy Minister	\$ 510 803	\$ 330 300
2. Energy Branch administration	169 105	178 400
3. Mines and Minerals Branch administration	328 039	207 600
4. Accounting, Personnel, and Administration	196 686	256 900
5. Clerical support services	187 591	264 400
6. Cartographic Services	200 758	217 900
TOTAL Administration Division	<u>\$1 592 982</u>	<u>\$1 455 500</u>
MINERAL RESOURCES DIVISION		
1. Mineral Resources	\$ 72 712	\$ 113 800
2. Regional Surveys	67 534	246 800
TOTAL Mineral Resources Division	<u>\$ 140 246</u>	<u>\$ 360 600</u>
MINING ENGINEERING DIVISION		
1. Mining Engineering	\$ 129 795	\$ 107 200
2. Mine Safety and Inspection	316 712	361 900
3. Drilling Services	387 772	442 200
4. Support Services	257 396	236 400
TOTAL Mining Engineering Division	<u>\$1 091 675</u>	<u>\$1 147 700</u>
ENERGY RESOURCES DIVISION		
1. Petroleum Resources	\$ 216 974	\$ 273 600
2. Coal Exploration	99 354	249 700
3. Peatlands Inventory	774	123 600
4. Coal Development and Utilization	87 365	80 000
TOTAL Energy Resources Division	<u>\$ 404 467</u>	<u>\$ 726 900</u>

Operations Continued

Division Activity Budget Subject Title	Actual Expenditures 1981-82	Forecast Expenditures 1982-82
MINERAL DEVELOPMENT DIVISION		
1. Mineral Development	\$ 170 567	\$ 188 000
2. Exploration Monitoring	128 160	175 800
3. Library Services	108 968	176 400
TOTAL Mineral Development Division	<u>\$ 407 695</u>	<u>540 200</u>
SUBTOTAL OPERATIONS	<u>\$4 339 095</u>	<u>\$5 589 300</u>

Assistance Programs

Budget Subject Title	Actual Expenditures 1981-82	Forecast Expenditures 1982-83
COAL INDUSTRY ASSISTANCE		
1. Coal Miner's Assistance	\$ 462 301	\$ 500 000
2. Coal Development — Novaco	1 389 428	224 000
3. Coal Mines Subsidy	750 722	885 000
4. Coal Reclamation Project	1 560 681	1 532 200
TOTAL (Coal Industry Assistance)	<u>\$ 4 163 132</u>	<u>\$ 3 141 200</u>
ENERGY ASSISTANCE		
1. Coal Liquifaction	\$ 229 627	\$ 250 000
2. Power Rate Assistance	21 355 155	24 330 000
3. Oil Substitution	1 707 222	2 000 000
TOTAL (Energy Assistance)	<u>\$23 292 004</u>	<u>\$26 580 000</u>
SUBTOTAL ASSISTANCE	\$27 455 136	\$29 721 200
SUBTOTAL OPERATIONS	4 339 095	5 589 300
TOTAL BUDGET OF DEPARTMENT	<u>\$31 794 231</u>	<u>\$35 310 500</u>

LEGISLATION

Introduction

The Nova Scotia Department of Mines and Energy receives its legislative mandate from the Public Services Act. This Act provides for a Department of Mines and Energy and appointment of a Deputy Minister. Further, it designates certain basic legislation and certain functions involved with energy and mineral issues for administration by the Department.

Seven Acts are administered by the Department or affect its operation.

Mineral Resources Act

The Mineral Resources Act governs the disposition of mineral rights for exploration and development, administrative procedures, resource management requirements, and royalties. Stone, sand, gravel, peat, soil, some gypsum and limestone, oil, natural gas, and oil shale are not currently considered "minerals" under this Act.

Coal, uranium, salt, and potash were withdrawn from application under Exploration Licences as of June 1, 1975. Special licences may be granted for work involving these minerals by Governor-in-Council (Mk 1008).

Petroleum and Natural Gas Act

The Petroleum and Natural Gas Act governs disposition of mineral rights for petroleum and natural gas exploration both onshore and offshore.

Gas Storage Exploration Act

The Gas Storage Exploration Act governs the exploration and development of underground storage of liquid or gaseous petroleum products.

Treasure Trove Act

The Treasure Trove Act governs the exploration for precious stones and metals in a state other than their natural state. Terms and conditions of licence and royalty requirements are prescribed by the Governor-in-Council.

Coal Mines Regulation Act

The Coal Mines Regulation Act governs operation and safety in coal mines. Cape Breton Development Corporation mines are not covered by the Act because the Canada Department of Labour inspects federal crown corporations.

Metalliferous Mines and Quarries Regulation Act

The Metalliferous Mines and Quarries Regulation Act governs operation and safety in metalliferous mines (i.e. mines not covered by Coal Mines Regulations Act) and quarries (except quarries operated by the Department of Transportation).

Gypsum Mining Income Tax Act

The Gypsum Mining Income Tax Act establishes reporting procedures and rates of income tax on gypsum mining operations.

An Act to Confer Certain Powers Upon the Lieutenant Governor-in-Council and to Amend the Mines Act

Certain powers are conferred on the Lieutenant Governor-in-Council for purposes of maintaining an acceptable level of stability in the Coal Mining Industry. This Act provides authority for a subvention program for independent coal mine operators (OIC 73-78), preretirement leave program (OIC 77-574), coal waste dumps reclamation project (OIC 73-574), and establishment of Novaco (OIC 78-265).

APPENDIX A**PUBLICATIONS FOR FISCAL YEAR 1982-83****Mines and Minerals Branch**

- Paper 81-3: The Windsor Group of the Mahone Bay area, Nova Scotia, by P. S. Giles
Price: Hardcopy \$4.00, Microfiche \$1.50
- Paper 81-4: Principles of Tectonic Mapping Based Upon Plate Tectonic Theory, by J. D. Keppie
Price: Hardcopy \$1.50, Microfiche \$1.00
- Paper 82-1: Geology and Geochemistry of Selected Granitoid Plutons of Cape Breton Island, by S. M. Barr, G. A. O'Reilly, and A. M. O'Beirne
Price: Hardcopy \$8.00, Microfiche \$2.00
- Report 81-4: Index to Assessment Reports 1864-1980, by N. A. Lyttle and J. Gillespie-Wood
Price: Hardcopy \$10.00, Microfiche \$3.00
- Report 81-5: Keyword Index to Assessment Reports 1864-1980, by N.A. Lyttle and J. Gillespie-Wood
Price: Microfiche only \$5.00
- Report 81-6: Index to Publications, Open File Reports and Theses 1862-1980, by N. A. Lyttle and J. Gillespie-Wood
Price: Hardcopy \$10.00, Microfiche \$3.00
- Report 81-7: Index to Drillhole and Well Data 1862-1980, by N. A. Lyttle and J. Gillespie-Wood
Price: Hardcopy \$10.00, Microfiche \$3.00
- Report 82-1: Mineral Resources Division, Report of Activities, 1981
Price: Hardcopy \$7.00, Microfiche \$2.00
- Report 82-2: Index to Assessment Reports 1981 (with Keyword Index), by N. A. Lyttle and J. Gillespie-Wood
Price: Hardcopy \$3.00, Microfiche \$2.00

- Report 82-3: Keyword Index to Publications in NSDME Report 81-6, by N. A. Lyttle and J. Gillespie-Wood
Price: Microfiche only \$2.00
- Report 82-4: Keyword Index to Open File Reports in NSDME Report 81-6, by N. A. Lyttle and J. Gillespie-Wood
Price: Microfiche only \$1.00
- Report 82-5: Keyword Index to GSC Documents on Nova Scotia to 1980
Price: Microfiche only \$2.00
- Report 82-7: Uranium in Nova Scotia: A Background Summary for the Uranium Inquiry, Nova Scotia
Price: Hardcopy \$10.00, Microfiche \$2.00
- Info. Series No. 5: Sixth Annual Open House and Review of Activities, Dec. 1 and 2, 1982, Program and Summaries
Price: Hardcopy \$1.00, Microfiche \$1.00
- Reprint 82-1: Observations on the Ichnology of the Meguma Group (?Cambro-Ordovician) of Nova Scotia, by R. K. Pickerill and J. Duncan Keppie, 1981. Reprinted from Maritime Sediments and Atlantic Geology, v. 17, 1981
Price: Hardcopy \$1.50, Microfiche \$1.00
- Reprint 82-2: A Rapid Method for the Determination of Gold and Silver in Sulfide Ores and Rocks, by R. R. Brooks, J. Holzbrecher, D. E. Ryan, H. F. Zhang, and A. K. Chatterjee, 1981. Reprinted from Atomic Spectroscopy, v. 2, no. 5, 1981
Price: Microfiche only \$1.00
- Reprint 82-3: Geochemistry and the Distribution of Uranium and Thorium in the Granitoid Rocks of the South Mountain Batholith, Nova Scotia, by A. K. Chatterjee and G. K. Muecke. Reprinted from Uranium in Granites: GSC Paper 81-23, p. 11-17, 1982
Price: Hardcopy \$1.50, Microfiche \$1.00
- Reprint 82-4: The Minas Geofracture, by J. Duncan Keppie, 1982. Reprinted from GAC Special Paper 24
Price: Hardcopy \$2.00, Microfiche \$1.00

- Reprint 82-5: The Distribution of Gold in Rocks and Minerals of the Meguma Group of Nova Scotia, Canada, by Robert R. Brooks, Amulaya K. Chatterjee, Paul K. Smith, Douglas E. Ryan, and Han F. Zhang. Reprinted from *Chemical Geology*, v. 35, 1982
Price: Hardcopy \$1.50, Microfiche \$1.00
- Map 82-1: Pleistocene Geology and Till Geochemistry of South Central Nova Scotia (Sheet 6), by R. R. Stea, scale 1:100 000
Price: \$3.50
- Map 82-2: Antigonish Basin, by R. C. Boehner and P. S. Giles, scale 1:50 000
Price: \$3.00
- Map 82-3: Eureka Area, by P. S. Giles, scale 1:50 000
Price: \$3.00
- Map 82-4: Shubenacadie and Musquodoboit Basins, by P. S. Giles and R. C. Boehner, scale 1:50 000
Price: \$5.00
- Map 82-5: Geology Map of the Northern Antigonish Highlands, Nova Scotia, by J. B. Murphy, J. D. Keppie, and A. Hynes, scale 1:50 000
Price: \$4.00
- Map 82-6: Advocate Harbour-Port Greville Region, by H. V. Donohoe Jr. and P. I. Wallace, scale 1:50 000
Price: \$8.00*
- Map 82-7: Parrsboro-Five Islands Region, by H. V. Donohoe Jr. and P. I. Wallace, scale 1:50 000
Price: \$8.00*
- Map 82-8: Economy River-Folly Lake Region, by H. V. Donohoe Jr. and P. I. Wallace, scale 1:50 000
Price: \$8.00*
- Map 82-9: Debert-Mt. Thom Region, by H. V. Donohoe Jr. and P. I. Wallace, scale 1:50 000
Price: \$8.00*

*Note: Maps 82-6 to 82-9 may be purchased individually or as a set for \$25.00

Map 82-10: Pleistocene Geology and Till Geochemistry of Southwestern Nova Scotia (Sheets 7 + 8), by R. R. Stea and D. R. Grant, scale 1:100 000
Price: \$8.00

Tectonic Map of Nova Scotia, by J. D. Keppie, scale 1:500 000
Price: \$5.00

Metallogenic Map of Nova Scotia, by A. K. Chatterjee, scale 1:500 000
Price: \$5.00

Energy Branch

Oil and Gas Exploration in Nova Scotia, 82-83, Price \$2.00.

Calories: Making Every One Count, Nova Scotia Department of Mines and Energy and Regional Economic Expansion Canada, Price \$4.50.

Energy Conservation for Individuals — A Guide to Government Programs, Free.

Energy Program Guide for Business, Industry and Institutions, Free.

Energy Generation From Municipal Solid Wastes, 1982, Price \$5.00.

Nova Scotia Statistical Profile 1983 by Nova Scotia Department of Mines and Energy, Price \$3.00.

Waste Heat Recovery an economic opportunity, Free.

APPENDIX B

PRODUCTION INFORMATION FROM MINES, QUARRIES, AND OTHER OPERATIONS

In this appendix each producer is described and located. Tables B-1 to B-5 summarize the production figures for each commodity or mineral. Locations of operations are shown on the accompanying Figures B-1 to B-4. Production data are for the calendar year (1 January 1982 to 31 December 1982).

The mining industry in Nova Scotia employed approximately 6284 people in calendar year 1982. The total value of the commodities produced was \$273.8 million.

Base Metal and Gold Mines

One company operated during the 1982 calendar year. Its location is shown in Figure B-1 and its production is summarized in Table B-1.

Base Metal Mines

CANADA WIDE MINES LTD.

Mine Site: Gays River

The Gays River Mine was located at the Gays River area of Colchester and Halifax Counties. The mine has been permanently closed and the site has been rehabilitated and restored.

YAVA MINES LTD.

Mine Site: Silvermines, Cape Breton County

Mill Site: Enon, Cape Breton County

The mine has been closed permanently following the company's bankruptcy. The assets have been dispersed by the Receiver. The mill and mill site have been purchased by Novex Mining and Exploration Ltd. for treatment of the ore from its Pine Brook barite deposit.

Gold Mines**NORTHUMBERLAND MINES LTD.**

President: W. Young
Address: P.O. Box 120, Sherbrooke, Nova Scotia
B0J 1C0
Production: 558 ounces (15,938 kg) gold
Employees: 10 (seasonal in part)

The company commenced operation of a cyanide mill at Cochrane Hill Mine site in the Fall of 1981. The company is mining ore from a small open-pit and conducting milling tests to determine gold recovering from highly irregular ore zones. The mine and mill are now closed and the test results are being evaluated.

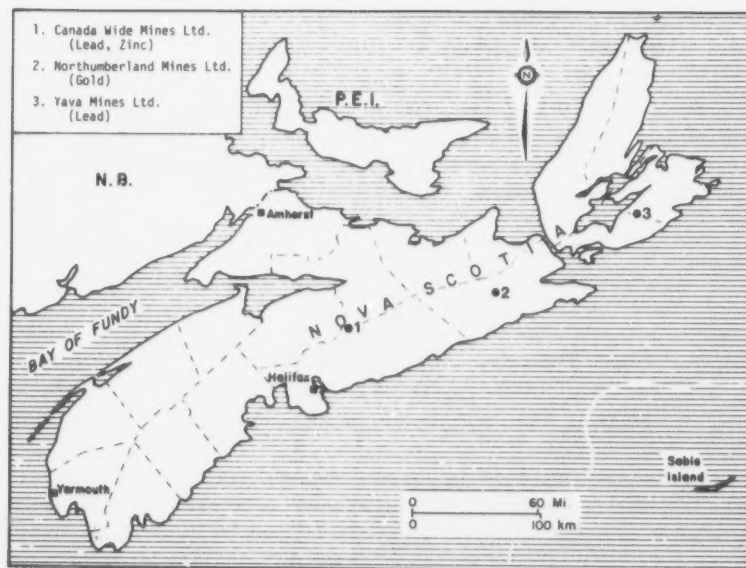


FIGURE B-1. Location of base metal and gold mining activity.

TABLE B-1. Gold production

COMPANY	LOCATION	PRODUCTION (troy ounces)	PRODUCTION (kilograms)	NUMBER EMPLOYED	APPROXIMATE VALUE ¹
Northumberland Mines Ltd.	Cochran Hill, Guysborough County	588	15.938	10	\$ 237 165

¹estimate from Department of Mines and Energy sources.

Coal Mining Operations

In 1982, there were five producing underground coal mines, three open-pit coal mines and three coal dump reclamation plants. The Donkin Mine was under active development. Table B-2 summarizes production information. The location of the operations is shown in Figure B-2. Nova Scotia coal mines produced 3 357 448 tons (3 052 225 t) of coal and employed 4761 people in 1982. The total value was \$167 377 000.

Underground Coal Mines

CAPE BRETON DEVELOPMENT CORPORATION

Manager (Coal	
Production):	D. Shields, Vice President, Mining Operations
Address:	P.O. Box 2500, Sydney, Nova Scotia B1P 6K9
Lingan Mine:	Lingan
No. 26 Colliery:	Glace Bay
Prince Mine:	Point Aconi
Donkin/Morien	Donkin (Development)
Production:	2 854 916 tons (2 595 378 t) coal
Employees:	Production: 2909; Nonproduction: 1599; Total: 4 508

The Cape Breton Development Corporation (CBDC), a federal crown corporation, operates three producing coal mines in Nova Scotia and another which is under development. The coal from the Lingan, No. 26 Colliery, and Prince Mines is mined by long-wall mining using a continuous mining machine.

EVANS COAL MINES LTD.

Manager:	G. Evans
Address:	R.R. #1, Inverness, Nova Scotia B0E 1N0
Production:	53 862 tons (48 965 t) coal
Employees:	Production: 49; Nonproduction: 5; Total: 54

The Saint Rose Colliery, Inverness County, is owned and operated by Evans Coal Mines Ltd. The entire output is produced by room and pillar system of mining with the use of slushers. The coal is then transported to the haulage level by chain conveyor, loaded into one-ton mine cars, and hoisted to surface in the main slope.

DRUMMOND COAL COMPANY LTD.

Manager: G. Dooley
Address: P.O. Box 929, Westville, Nova Scotia B0K 2A0
Production: 13 236 tons (12 033 t) coal
Employees: Production: 30; Nonproduction: 3; Total: 33

The Drummond No. 2 mine is located near the town of Westville, Nova Scotia. The output of the Drummond Mine is gained by the room and pillar method of mining. The coal is cut, shot, and hand loaded into mine cars at the coal face. The mine cars are then hauled to the main holding bottom and hoisted via the main slope to the surface.

Open-Pit Coal Mines**NOVACO LTD.**

Manager: C. White
Address: P.O. Box 147, Sydney Mines, Nova Scotia B1V 1Y3
Production: 265 872 tons (241 702 t) coal
Employees: Production: 22; Nonproduction: 7; Total: 29

The Point Aconi open-pit mine is owned by Novaco but the actual mining is done under contract by Nova Construction Co. of Antigonish. The overburden is drilled, blasted, and removed by a dragline excavator. The exposed coal seam is loaded into trucks with a small shovel.

The Springhill open-pit mine started production in March 1982. By the year end 66 000 tons (60 000 t) of coal had been produced. The actual mining operations were done under contract for Novaco.

T. BROGAN & SON CONSTRUCTION LTD.

Manager: T. Brogan
Address: P.O. Box 199, Florence, Cape Breton B0C 1J0
Production: 49 782 tons (45 256 t) coal
Employees: Production: 18; Nonproduction: 1; Total: 19

Two strip mines are operated at Point Aconi, Cape Breton. Site No. 1 is at Big Head and Site No. 2 is at Table Rock. The overburden is removed by dragline excavator and the exposed coal is ripped with a bulldozer and

loaded into trucks with a front-end loader. Site reclamation was completed on worked-out areas.

Coal Reclamation Plants

THORBURN MINING LTD.

Manager: C. Carr
Address: P.O. Box 1000, Stellarton, Nova Scotia B0K 1S0
Production: 25 652 tons (23 320 t) of reclaimed coal
Employees: 47 (at end of production)

The supply of suitable dump material was exhausted by October 1982 and production ceased. About 20 people were retained to help with plant demolition and site reclamation.

SELMINCO INC.

Manager: D. Frederickson
Address: P.O. Box 189, New Waterford, Nova Scotia B1H 4N9
Production: 94 128 tons (85 571 t) reclaimed coal
Employees: Production: 60; Nonproduction: 11; Total: 71

The Company's reclamation plant at the Prince Mine Dump in Sydney Mines continued operation. A new reclamation plant utilizing the Dump at Scotstown near New Waterford commenced production in 1982.

TABLE B-2. Coal Production

COMPANY	MINE NAME	LOCATION	PRODUCTION (saleable coal)		NUMBER EMPLOYED Production ¹	Total Employees ²	APPROXIMATE VALUE ³
			(tons)	(tonnes)			
<i>Underground</i>							
Cape Breton Development Corp. (CBDC)	Prince Mine	Point Aconi,	2 854 916	2 595 378	2 909	4 508 ¹	
	No. 26 Colliery	Cape Breton County ⁴					
	Lingan Mine	Glace Bay,					
		Cape Breton County ⁴					
		Lingan, Cape Breton County ⁴					
Evans Coal Mines Ltd.		St. Rose,	53 862	48 965	49	54	
		Inverness County					
Drummond Coal Co. Ltd.		Westville,	13 236	12 033	30	33	
		Pictou County					
		TOTAL (underground)	2 908 777	286 958	2 988	4 595	
<i>Open-pit</i>							
T. Brogan and Son Construction Ltd.		Point Aconi,	49 782	45 256	18	19	
		Cape Breton County					
Novaco		Point Aconi,	265 872	241 702	22	29	
		Cape Breton County					
		Springhill,					
		Cumberland County					
		TOTAL (open-pit)	315 654	286 958	40	48	

TABLE B-2. Continued

COMPANY	MINE NAME	LOCATION	PRODUCTION (saleable coal)		NUMBER EMPLOYED		APPROXIMATE VALUE ⁵
			(tons)	(tonnes)	Production ¹	Total Employees ²	
Reclamation							
Thorburn Mining Ltd.		Stellarton, Pictou County	25 652	23 320	42	47	
Selminco Inc.		Sydney Mines, Cape Breton County	94 128	85 571	60	71	
TOTAL (reclamation)			119 780	108 891	102	118	
TOTAL FOR ALL PRODUCERS			3 344 211	040 192	3 130	4 761	\$167 377 000

¹personnel employed directly with mining (underground and surface)²personnel employed in clerical, supervisory, etc. positions as well as mining personnel³includes personnel employed by CBDC in railway, Donkin Mine development, coal preparation, shipping pier, etc., as well as mining operations⁴washed coal⁵estimate from Department of Mines and Energy sources

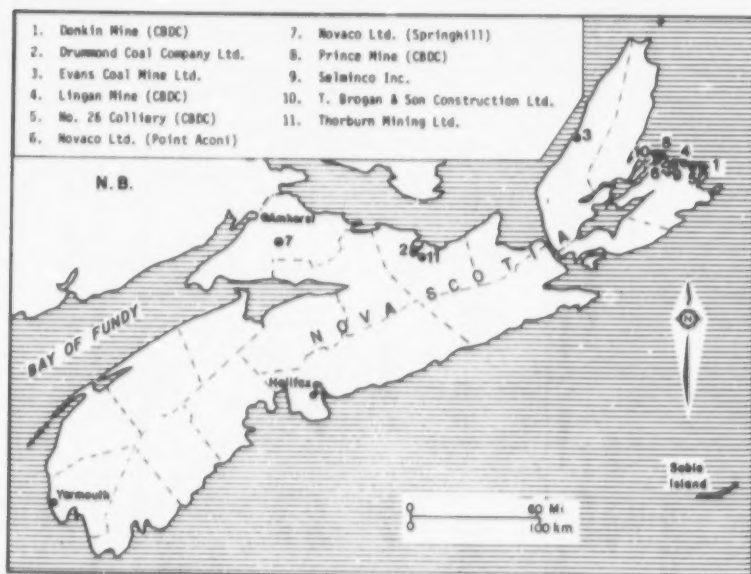


FIGURE B-2. Location of coal mining operations.

Industrial Minerals

Industrial minerals form a significant part of the total mineral production in Nova Scotia. The value of industrial minerals (\$66 799 514) and number of people employed (1010) are second only to coal. Thirteen quarries or mines produce gypsum, salt, anhydrite, limestone, barite, and dolomite. The locations of these mines or quarries are shown on Figure B-3. Table B-3 summarizes production information.

Gypsum and Anhydrite

DOMTAR CONSTRUCTION MATERIALS LTD.

Manager:	S. G. Johnson
Address:	P.O. Box 758, Windsor, Nova Scotia B0N 2T0
Production:	7852 tons (7137 t) gypsum
Employees:	Production: 2; Nonproduction: 12; Total: 14

Domtar Construction Ltd. operates a small gypsum quarry at MacKay Settlement. The actual quarry operation is done under contract by D. MacDonald. Domtar is the only gypsum operation in the Province that undertakes any processing of the crude gypsum. The gypsum produced is calcined.

FUNDY GYPSUM CO. LTD.

Manager: G. Raymond
Address: P.O. Box 400, Windsor, Nova Scotia B0N 2T0
Production: 99 169 tons (90 154 t) anhydrite
857 208 tons (779 280 t) gypsum
Employees: Production: 182; Nonproduction: 12; Total: 194

The Fundy Gypsum Company Ltd. quarries and crushing plants are located in the Wentworth and Miller Creek areas near Windsor, Nova Scotia. After selective quarrying, the materials are crushed and transported via unit train to ship loading facilities at Hantsport for shipment to wall board manufacturing plants in the United States. Two quarries are in operation: Wentworth, which produces anhydrite and gypsum, and Miller Creek, which produces gypsum only.

GEORGIA-PACIFIC CORPORATION

Manager: J. Graham
Address: P.O. Box 400, Port Hawkesbury, Nova Scotia B0E 2V0
Production: 670 800 tons (609 818 t) gypsum
Employees: Production: 37; Nonproduction: 11; Total: 48

The quarry is situated at River Denys, Inverness County. The gypsum is transported by rail to ship loading facilities at Port Hastings. At the quarry the overburden is stripped by a dragline excavator and the gypsum is recovered by shovel and truck.

LITTLE NARROWS GYPSUM COMPANY LTD.

Manager: T. H. Davis
Address: Little Narrows, Nova Scotia B0E 1T0
Production: 35 555 tons (32 323 t) anhydrite
754 938 tons (686 307 t) gypsum
Employees: Production: 28; Nonproduction: 41; Total: 69

The company operates a gypsum and anhydrite quarry at Little Narrows with ship loading facilities on the Bras d'Or Lake. This is the oldest gypsum quarry operating in the Province; it started in 1936.

NATIONAL GYPSUM (CANADA) LTD.

Manager: J. R. Cameron
Address: P.O. Box 637, Dartmouth, Nova Scotia B2Y 3Y9
Production: 2 655 292 tons (2 413 902 t) gypsum
Employees: Production: 8; Nonproduction: 115; Total: 123

National Gypsum operates the largest gypsum quarry in the Province at East Milford and a ship loading facility at Wrights Cove, Dartmouth. Unit trains transport the gypsum from the quarry to the dockside where it is shipped to east coast United States markets.

Salt

CANADIAN SALT CO. LTD.

Manager: D. Hosking
Address: P.O. Box 160, Pugwash, Nova Scotia, B0K 1L0
Production: 1 153 431 tons (1 048 574 t) salt
Employees: Production: 69; Nonproduction: 158; Total: 227

The Pugwash Mine is located in the village of Pugwash, Nova Scotia. A room and pillar system of extraction is employed utilizing trackless diesel equipment. In this system of extraction the working faces are first undercut and then blasted and loaded by front-end loaders onto trucks for transportation to a central underground crushing station. Once crushed, the salt is then skip-hoisted and fed to the processing plant on surface. This plant produces industrial grades, blocks for farm use, and refined salt for domestic consumption. The industrial grades are either supplied in bulk for truck transportation, bagged for rail transportation, or transported in bulk or bag to storage and shiploading facilities at the Pugwash Harbour wharf.

DOMTAR CHEMICALS GROUP-SIFTO SALT DIVISION

Manager: R. E. Simmie
Address: P.O. Box 550, Amherst, Nova Scotia B4H 4A1
Production: 78 569 tons (71 426 t) salt
Employees: Production: 0; Nonproduction: 90; Total: 90

Domtar Chemicals Group, Sifto Salt Division, operates a solution salt mine located near Nappan, Cumberland County. The mining procedure involves the drilling of a hole to the underground salt deposit. Water is pumped down to the deposit where it dissolves the salt, forming brine. The brine is then forced back to the surface where the salt is extracted using the "vacuum pan" process.

Barite

NYSTONE CHEMICALS LTD.

Manager: J. Prostack
Address: P.O. Box 64, Debert, Nova Scotia, B0M 1G0
Production: 2001 tons (1828 t) ore mined
680 tons (620 t) barite concentrate
Employees: Production: 0; Nonproduction: 30; Total: 30

The ore is mined using open-pit methods by a contractor who transports it to the North River Sand and Gravel Co. for crushing and storage in the latter's quarry. The ore is then shipped to the Debert Air Industrial Park for treatment in the company-owned mill. The barite concentrate is leached and ground to a fine powder and is sold for pharmaceutical use.

NOVEX MINING AND EXPLORATION LTD.

Manager: B. Coffin
Address: East Bay, Cape Breton, Nova Scotia
Production: no production; mine in development stage
Employees: 21

This Company has a barite deposit at Pine Brook near Irish Cove in Cape Breton. They have purchased the mill at Enon from the Receiver of the bankrupt Yava Mines and started production in late 1983.

Limestone and Dolomite

CANADA CEMENT LAFARGE LTD.

Manager: D. King
Address: P.O. Box 5, Brookfield, Nova Scotia B0N 1C0
Production: 589 479 tons (535 890 t) limestone
Employees: Production: 32; Nonproduction: 82; Total: 114

Canada Cement Lafarge Ltd. operates a limestone quarry at Brookfield, Colchester County, where the total production from the quarry is processed by an on-site cement manufacturing plant, owned and operated by the Company.

MOSHER LIMESTONE LTD.

Manager: R. Mosher
Address: P.O. Box 28, Upper Mosquodoboit, Nova Scotia
B0N 2M0
Production: 148 500 tons (135 000 t) limestone
Employees: Production: 5; Nonproduction: 27; Total: 32

The Mosher Limestone Co. operates two quarries on a rotating basis in the Upper Mosquodoboit area of Halifax County and produces an agricultural grade dolomite/limestone. The product, when processed, is supplied in bulk or bagged for wide distribution throughout the Atlantic Provinces as fertilizer and solid conditioners.

RIDGE BROKERS LTD.

Manager: J. L. Murray
Address: P.O. Box 59, Havelock, New Brunswick E0A 1W0
Production: 10 703 tons (9730 t) limestone
Employees: Production: 9; Nonproduction: 0; Total: 9

The Company operates a quarry at South Side, Antigonish Harbour.

SCOTIA LIMESTONE LTD.

Manager: L. P. Kent
Address: P.O. Box 457, Sydney, Nova Scotia B1P 6H4
Production: Nil
Employees: 35

Due to poor market conditions in the steel industry no dolomite or limestone were quarried in 1982.



FIGURE B-3. Location of industrial minerals operations.

TABLE B-3. Industrial minerals production

COMPANY	LOCATION	PRODUCTION (tons)	PRODUCTION (tonnes)	NUMBER EMPLOYED Production ¹	NUMBER EMPLOYED Total Employees ²	APPROXIMATE VALUE ³
Gypsum						
Fundy Gypsum Co. Ltd.	Miller Creek, and Wentworth, Hants County	857 208	779 280	182	194	
Little Narrows Gypsum Co. Ltd.	Little Narrows, Victoria County	754 938	686 307	28	69	
Domtar Construction Materials Ltd.	Windsor, Hants County	7 852	7 138	2	14	
National Gypsum (Canada) Ltd.	Milford, Halifax County	2 655 292	2 413 902	8	123	
Georgia Pacific Corp.	River Denys, Inverness County	670 800	609 818	37	48	
	TOTAL (Gypsum)	4 946 090	4 496 445	257	448	\$30 382 000
Anhydrite						
Fundy Gypsum Co. Ltd.	Miller Creek, and Wentworth Creek, Hants County	99 169	90 154	included in above		
Little Narrows Gypsum Co. Ltd.	Little Narrows, Victoria County	35 555	32 323			
	TOTAL (Anhydrite)	134 724	122 477			\$ 791 903
Salt						
Canadian Rock Salt Co. Ltd.	Pugwash, Cumberland County	1 153 431	1 048 574	66	227	
Sifto Salt Division	Nappan, Cumberland County	78 569	71 426	0	90	
Domtar Chemical Group						
	TOTAL (Salt)	1 232 000	1 120 000	69	317	\$30 382 206

TABLE B-3. Continued

COMPANY	LOCATION	PRODUCTION (tons)	PRODUCTION (tonnes)	NUMBER EMPLOYED Production ¹	NUMBER EMPLOYED Total Employees ²	APPROXIMATE VALUE ³
Limestone						
Ridge Brokers Ltd.	Southside Harbour, Antigonish County	10 703	9 730	9	9	
Canada Cement Lafarge Ltd.	Brookfield, Colchester County	589 479	535 890	32	114	
Scotia Limestone Ltd.	Irish Cove, Cape Breton County	nil	nil	—	35	
Mosher Limestone Ltd.	Upper Musquodoboit, Halifax County	148 500	135 000	5	32	
N.S. Sand & Gravel Ltd.	Marble Mountain, Inverness County	4 762	4 329	4	4	
	TOTAL (Limestone)	753 444	684 949	50	194	\$ 4 623 405
Dolomite						
Scotia Limestone	Frenchvale, Cape Breton County	—	—	—	—	—
Barite						
Nystone Chemicals Ltd.	Brookfield, Colchester County	620	682	3	30	620 000
Novex Mining and Exploration, Ltd.	East Bay, Cape Breton County	0	0	—	21	—
	TOTAL (Barite)	620	682	3	51	\$ 620 000
TOTAL FOR INDUSTRIAL MINERALS		6 424 553	7 006 878	379	1 010	\$66 799 514

¹personnel working in quarry or mine²total number of employees including office, clerical, supervisory, etc. as well as production³estimate from Department of Mines and Energy sources

Aggregate Resources

Crushed stone and sand and gravel were third after coal and industrial minerals in value (\$36 273 142) and people employed (387). They comprise the structural materials category. Production information is summarized in Table B-4. The location of granite production is shown on Figure B-4.

Crushed Stone

The Province had 42 rock quarry operators who produced a total of 2 891 945 tons (2 629 041 t) in 1982 and employed 145 men. Individual company figures are shown in Table B-4.

Sand and Gravel

There were 42 producers of sand and gravel operating in the Province. During 1982, production was 6 481 392 tons (5 892 173 t) and 242 people were employed. Detailed production figures are shown in Table B-4.

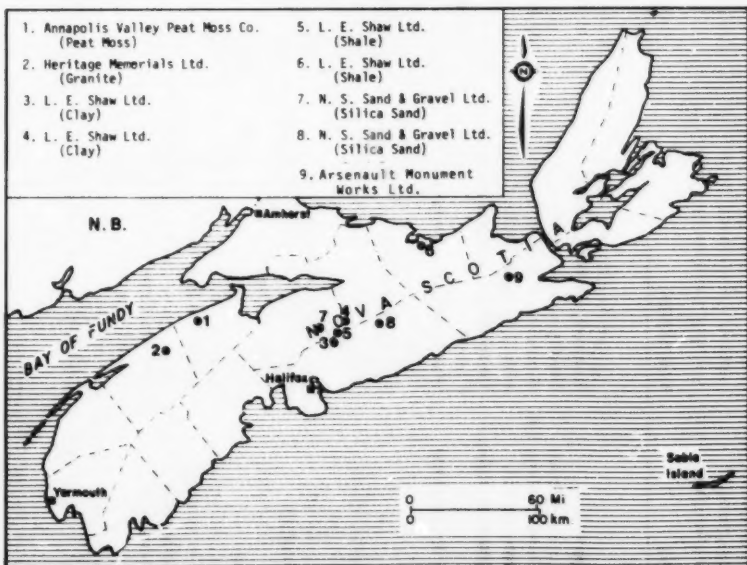


FIGURE B-4. Location of structural materials and miscellaneous materials operations.

TABLE B-4. Structural minerals production.

COMPANY	LOCATION	PRODUCTION (tonnes)	PRODUCTION (tonnes)	NUMBER EMPLOYED ¹	APPROXIMATE VALUE ²
Crushed Stone					
Atlantic Sand & Gravel Ltd.	Kearney Lake	167 200	152 000	10	
Conrad Brothers Ltd.	Montague	615 484	559 531	26	
Construction Aggregates Ltd.	Mulgrave	440 000	400 000	18	
Gateway Materials Ltd.	Kearney Lake Road	561 182	510 165	19	
Levatte Construction Ltd.	Sydney	90 005	81 823	10	
Colin R. MacDonald Ltd.	Antigonish	457	415	3	
Stanley Reid Construction Ltd.	Port Hilford	2 750	2 500	8	
Rocky Lake Quarry Ltd.	Bedford	515 900	469 000		
Satellite Equipment Ltd.	New Glasgow	121 237	110 215	1	
Scofia Limestone Ltd.	Frenchvale	8 250	7 500	2	
South Shore Sand & Gravel Ltd.	Chester Grant	72 380	65 800	10	
Steed & Evans Ltd.	Dartmouth	110 000	100 000	8	
Tidewater Construction Ltd.	Lower Sackville	10 095	9 177	—	
S. W. Weeks Construction Ltd.	New Glasgow	55 000	50 000	4	
W. Eric Wheby Ltd.	Dartmouth	122 007	110 915	4	
	TOTAL (crushed stone)	2 891 945	2 629 041	145	\$12 174 156
Estimated value \$4.62/tonne					
Sand and Gravel					
Aberdeen Paving Ltd.		398 200	362 000	12	
Acadia Road Contractors Ltd.		253 440	230 400	15	
Budget Paving Ltd.		11 978	10 889	7	
Doug Burns Excavating and Contr. Ltd.		55 000	50 000	3	
Canadian Pacific Railway (C.P.R.)		1 100	1 000	—	

TABLE B-4. Continued

COMPANY	LOCATION	PRODUCTION (tons)	PRODUCTION (tonnes)	NUMBER EMPLOYED ¹	APPROXIMATE VALUE ²
Carson Enterprises Ltd.		17 600	16 000	6	
Chiason Bros. Ltd.		5 500	5 000	4	
Cumberland Paving & Contractors Ltd.		88 000	80 000	3	
Ettinger Enterprises Ltd.		2 495	2 268	2	
Clyde Everett (1972) Ltd.		22 550	20 500	3	
L & M Gallant Contracting, Trucking Ltd.		26 400	24 000	2	
Gillis Construction (C.B.) Ltd.		1 497	1 361	6	
Everett J. Hanley		1 995	1 814	1	
Hatchet Lake Excavators Ltd.		9 977	9 070	4	
Roy Hiltz Excavating Ltd.		22 663	20 603	4	
Inter Supply Ltd.		85 047	77 315	10	
Kell's Enterprises Ltd.		4 491	4 083	4	
L & R Sand and Gravel Ltd.		39 909	36 281	2	
Latimer Construction Ltd.		22 000	20 000	3	
J.P. MacInnis Trucking, Ltd.		2 743	2 494	2	
Malcolm S. MacDonald Co. Ltd.		25 381	23 074	2	
Max White Excavating Ltd.		15 465	14 059	4	
Martell's Construction Ltd.		405 896	368 996	6	
Maurice Ready-Mix		10 789	9 808	1	
Meadows Sand & Gravel Ltd.		62 806	57 096	5	
Monher and Rawding Ltd.		137 500	125 000	2	
Municipal Ready Mix Ltd.		165 000	150 000	25	
North River Sand and Gravel Ltd.		998	907	1	
Nova Scotia Sand & Gravel		339 790	308 900	22	
Oickle Backhoe Service		9 977	9 070	1	

TABLE B-4. Continued

COMPANY	LOCATION	PRODUCTION (tons)	PRODUCTION (tonnes)	NUMBER EMPLOYED ¹	APPROXIMATE VALUE ²
Permanent Concrete Ltd.		521 635	474 214	16	
Pictou County Excavators Ltd.		9 977	9 070	7	
Vernon H. Shaw		34 100	31 000	2	
Standard Paving Maritime Ltd.		391 600	356 000	15	
W.K. Sharp & Son (Const.)		16 500	15 000	2	
Tidewater Construction Ltd.		105 185	95 623	14	
Earle Toole Trucking Ltd.		22 459	20 417	3	
Warren Maritimes Ltd.		128 002	116 365	13	
Welton Construction (1975) Ltd.		4 989	4 535	3	
Wilt-Kare Paving & Contr. Ltd.		51 586	46 896	4	
Yarmouth Sand & Gravel Ltd.		99 000	90 000	—	
Zutphen Brothers Construction Ltd.		5 610	5 100	1	
	TOTAL REPORTED	3 636 830	3 306 208	242	\$13 522 390
Non Reporting (mainly Department of Transportation)		2 844 562	2 585 965	—	10 576 596
	TOTAL (sand and gravel)	6 481 392	5 892 173	242	\$24 098 986
	TOTAL FOR AGGREGATE RESOURCES	9 373 339	8 521 214	387	\$36 273 142

Miscellaneous Materials

The production of miscellaneous materials is shown in Table B-5. Locations are given on Figure B-4.

Clay, Shale, Industrial Sand, Marble

L. E. SHAW LTD.
(including NOVA SCOTIA SAND AND GRAVEL)

President:	A. Shaw
Address:	5251 Duke Street, Halifax, Nova Scotia B3J 1P3
Production:	26 400 tons (24 000 t) clay and shale 36 190 tons (32 900 t) industrial sand 4756 tons (4324 t) limestone (marble)
Employees:	9

L. E. Shaw and its subsidiary Company, Nova Scotia Sand and Gravel, operate seven properties in Nova Scotia. The clay and shale are quarried from pits at Lantz, Milford, and Shubenacadie (all in Hants County), and a quarry in New Glasgow, Pictou County. The materials quarried are used in the company plant located in Lantz, Nova Scotia, for the manufacture of bricks and tiles. The Company also produces industrial sand at Elmsdale, Brazil Lake, and Sandy Desert and architectural limestone from the Marble Mountain quarry.

Dimension Stone

HERITAGE MEMORIAL LTD.

Owner:	M. Nelson
Address:	P.O. Box 308, Windsor, Nova Scotia, B0N 2T0
Production:	375 tons (340 t)

The Company periodically operates a small quarry at Nictaux West to obtain grey granite as part of its requirements for memorial works at Windsor. The operation depends upon market requirements.

ARSENAULT MONUMENT WORKS LTD.

Owner:	P. Arsenault
Address:	P.O. Box 1475, Antigonish, Nova Scotia B3B 2L4

Arsenault Monument Works Ltd. generates a quarry at Loch Katrine for the production of dimension stone used in memorials. The granite is quarried as needed.

Peat Moss

ANNAPOLIS VALLEY PEAT MOSS CO.

President:	H. Endres
Address:	Berwick, Nova Scotia B0P 1E0
Production:	7986 tons (7260 t) peat moss
Employees:	25 (15 part-time)

The peat bog is some 500 acres (200 ha) in area and during the five summer months up to 19 600 cubic feet (560 m³) per day are harvested depending upon the weather.

TABLE B-5. Miscellaneous materials production

COMPANY	LOCATION	PRODUCTION (tons)	PRODUCTION (tonnes)	NUMBER EMPLOYED Production ¹ Total Employees ²	APPROXIMATE VALUE ³
Clay					
L.E. Shaw Ltd.	Lantz Shubenacadie	12 000 —	10 800 —	2 —	60 —
Shale					
L.E. Shaw Ltd.	Milford New Glasgow	14 000 10 000	12 600 9 000	1 1	1 1
	TOTAL (clay and shale)	36 000	32 400	4	4
Silica Sand					
Nova Scotia Sand & Gravel Ltd.	Nine Mile River				
	TOTAL (silica sand)	36 155	32 540	7	7
Dimension Stone					
Heritage Memorials Ltd.	Quarry: Nictaux, Annapolis County Plant: Windsor, Hants County	375	340	—	24
Arsenault Monument Works Ltd.	Quarries: Loch Katrine and North Grant, Antigonish County Plant: Antigonish	—	—	—	8
	TOTAL (dimension stone)	375	340		32
					\$ 540 000
					\$ 831 565

TABLE B-5. Continued

COMPANY	LOCATION	PRODUCTION (tons)	PRODUCTION (tonnes)	NUMBER EMPLOYED Production ¹ Total Employees ²	APPROXIMATE VALUE ³
Peat Moss					
Annapolis Valley Peat Moss Company	Berwick				
	TOTAL (peat moss)	12 517	11 265	95	\$1 788 168
	(number of bales produced is 298 028 at 4 ft. ¹ per bale)			105	
TOTAL FOR MISCELLANEOUS MATERIALS					
				106	\$3 159 733

¹production personnel only²total number of employees including office, clerical, supervisory, etc. as well as production³estimate from Department of Mines and Energy sources